A review of *Taraxacum* (Asteraceae) in eastern Finland (Ladoga Karelia and North Karelia)

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Little is known about changes in the abundance and species composition of dandelions (*Taraxacum*) in Finland. However, Eastern Finland, the biogeographical provinces of Karelia ladogensis and Karelia borealis, has been explored since 1985. Carl-Erik Sonck collected dandelions there mainly in the 1940s and published his results later (Sonch 1964a). The comparison revealed that changes were considerable over this 60-year period. Species of the section *Taraxacum* had become more frequent, while those of the sections *Borea* and *Erythrosperma* had declined. After Sonck, 88 species were found to be new to North Karelia and 24 to Ladoga Karelia. Respectively, 16 and 33 species were not re-discovered in these provinces. The figures are approximate, particularly concerning Karelia ladogensis, because a larger part of this province has not been studied since 1945 when most of its territory was ceded to the former Soviet Union.

Introduction

Earlier information on the dandelions of eastern Finland is from a few areas only. The vicinity of Lieksa (Karelia borealis) is the best studied, thanks to Carl Erik Sonck (1905–2004); otherwise only scarce data are available, mainly from the collections of Sonck and Gunnar Marklund. The most extensive material from Karelia ladogensis is from Sortavala, in present-day Russia. Some specimens were collected from the Finnish part of that biogeographical province (Fig. 1, later in the text just province), mainly by B. Pettersson and C.-F. Lundevall after the Second World War. Savonia borealis is represented by herbarium specimens from some districts only. Heikkinen collected many samples from Kainuu (Kn), Kajaani and Hyrynsalmi; otherwise collections are scarce.

This paper deals with the species composition and distribution of *Taraxacum* in the Finnish provinces of Karelia borealis, (Kb) and Karelia ladogensis (Kl/Fin). In addition to historical records, I present my own observations on the less frequent species. Data from neighbouring provines Sa, Sb and Ok (Fig. 1) is given also. Concerning Ladoga Karelia, only the Finnish part of its historical territory is dealt with, because most of this territory was ceded to the former Soviet Union in 1945 (KI/Rus). Old observations from the present-day Russian territory (KI/Rus) are mentioned as exceptions.

Materials and methods

The most important sources for this research are the published study by Carl Erik Sonck, Gefässplanzenflora von Pielisjärvi und Lieksa, Nordkarelien (Sonck 1964a), as well as the collections of the Botanical Museum of the University of Helsinki (H) and the Riksmuseet in Stockholm.
The specimens from Helsinki were studied repeatedly over a ten-year period, and those of Stockholm were examined as digital images via the Internet (www.nrm.se/forskningosamlingar/samlingar/databaser/kryptos.8598.html). The species distribution in Finland was derived from Sältin (1965). Some additional information is based on collections at the Botanical Museum, University of Oulu (OULU). My collections are deposited at H, or will be there later.

Sonck collected dandelion specimens from 1944 to 1948, as is evident from the museum’s accessions. Even though I checked only some of Sonck’s collections, it is likely that all of them on which his work (Sonck 1964a) was based have come from this very period. As well as the earlier collections, Sonck also had later observations from Lieksa. In these cases, the observation year is mentioned in the present paper. Only duplicates of Sonck’s specimens are currently incorporated into the collections (H). Sonck’s personal herbarium (donated to H after his death) is still waiting to be examined, so it is possible that some information from that herbarium is overlooked in this paper.

The research area of Sonck, Lieksa and Pielisjärvi (Kb), has been the combined municipality of Lieksa since the beginning of 1973; for this reason I use the name Lieksa for Sonck’s complete research area. Sonck mentioned 77 species of dandelions from Lieksa. In addition, several species based on his material were identified later.

Finland’s most eminent Taraxacum expert, curator of the phanerogam collections at H, Gunnar Marklund, examined Sonck’s collections and taught him how to identify the Taraxacum species from Lieksa. Marklund participated in the field work in 1947.

I have studied dandelions in the area since 1985. First I focused on learning how to identify the species, and thus the number of my observations is few in the early years of 1990–1996. In 1998 I made the first observation lists of dandelions according to habitats and by parish. Most of the distribution data is from my hometown, Joensuu, and in North Karelia the parish of Nurmes is the most incompletely studied. Public parks are trimmed too early, and secondary flowering later in the season is common for this reason. Immature, too luxurious because of fertilizers, and late season individuals are often unidentifiable. Consequently, rare species may be overlooked. The best localities for dandelions nowadays are roadsides and garden lawns which are often cut after the dandelions have matured. The renowned Danish Taraxacum expert Hans Øllgaard worked with me in 1999, and the species lists from that year are nearly perfect in the present review. Specimens examined refers to my own collections in the study area since 1985, and to those I have done jointly with others. Finnish words katu means a street and tie a road in English.
Hans Øllgaard examined many difficult specimens. However, for several reasons some identifications may still be erroneous, particularly if a species later turns out to be new to science. These errors will be corrected by future taraxacologists.

I have also cultivated numerous dandelions that were not possible to identify in field, at the Botania botanic garden in Joensu. This cultivation allowed for identification in many cases, and in the future eight new species will be described on the basis of the cultivated plants.

Many changes in the number of municipalities in Karelia borealis were made during the inventory. Joensu, Kiihtelysvaara and Tuupovaara were combined at the beginning of 2005 to form present-day Joensu. and in the beginning of 2009 Eno and Pyhäselkä were merged with Joensu, too. Tohmajärvi and Värtsilä were united in 2005 to form the municipality of Tohmajärvi. In Karelia ladogensis the municipalities of Parikkala, Saari and Uukuniemi were in 2005 combined to form the municipality of Parikkala. In this paper the old names are used in order to compare historical records. As well, the old names Säyneinen (today Juankoski) in Karelia borealis, and Simpele (today Rautjärvi) in Karelia ladogensis, are used, although these entities already merged with other municipalities in the early 1970s.

The abbreviations used for different provinces are shown in Fig. 1, and the abbreviations concerning persons responsible for identifications are given in Table 1.

**Results**

The information on the localities is summarised in Fig. 2. and Table 2. Species distribution by biogeographical provinces (Fig. 1) is provided in Table 3. The last column of Table 3 shows Sonck’s data from Lieksa collected during 1944–1948. Chronologically, in the period 1985–1991 some data collected by others may slightly overlap my own information.

With a few exceptions, the nomenclature follows the *Taraxacum* checklist of Scandinavia and the Baltic States (Lundevall & Øllgaard 1999). The updated version of this checklist (December 2011) has not yet been published.

**Taraxacum species in the study area, listed according to sections**

**Section Erythrosperma**

*Taraxacum falcatum* Brenner

This species was observed by Sonck to be scattered in Lieksa (Kb), with 8 localities. Sälthin (1965) recorded it in Kl/Fin, but I have not found the relevant material from the Finnish part of this province. These observations may solely refer to the present-day Russian territory (see the list of specimens in Sennikov 2007). In Finland this species is known currently from neighbouring provinces Sa, Sb and Ok.

*Taraxacum fulvum* Raunk.

This species was observed by Sonck to be common in Lieksa (Kb), with more than 50 localities. It was sparse but more common than today. In addition, it has been earlier found in Joensu, Säyneinen, Rautavaara (Kb) and in Simpele (Kl/Fin). I have collected it in four localities in Kb. Fairly sparse.

Specimens examined. Kl/Fin: Kontiolahti, field on the W-side of the former hospital (69633:36434) 1999 [HØ JR ER]; Lieksa, Ruunaa, Mattila, NW-side of the house, near a pile of sand, old lawn (70346:36683) 1985 [JR]; Outokumpu, Kuusijärvi, sandy sports field (69567:35983) 2005 [JR, PO]; Tohmajärvi, Onkamo, lawn nearby the cross of highway 6 and road 70 (69155:36622) 2007 [JR].

*Taraxacum isthmicola* H.Lindb.

In comparison to the other species of section *Erythrosperma*, *T. isthmicola* has not declined as much as the other ones. Sonck found it 190 in localities in Lieksa. Old observations are available from Nurmes, Joensu, Säyneinen and Rautavaara (Kb), and from Simpele (Kl/Fin). I have observed it in nine municipalities.

Table 1. Taraxacologists responsible for identifications of the specimens studied, and abbreviations of their names used in the text.

<table>
<thead>
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<th>Name</th>
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<td>Erkki Reinikka</td>
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<td>Veikko Lilja</td>
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Table 2. Localities studied, observation times and persons (Table 1) responsible for field work. Coordinates are given in terms of the Uniform Coordinate System (UCS).

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Fig. 2. Studied localities in Karelia borealis and Karelia Ladogensis, see. Fig. 1.
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</tr>
<tr>
<td>71</td>
<td>13.6.1998</td>
<td>Kb, Värtsilä, Niirala, Värtsilän th</td>
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<td>72</td>
<td>4.6.2005</td>
<td>Kb, Värtsilä, Niirala, Rajantie</td>
<td>69018:36871</td>
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</table>

**Taraxacum proximum** (Dahlst.) Raunk.
There are no previous observations from the study area. Hans Buch collected it in 1908 in Lappeenranta (Sa), Harald Lindberg in Joroinen (Sb) in 1911, and Gunnar Marklund in Leppävirta (Sb) in 1955. Today it is fairly sparse in Kontiolahti, Kontioniemi (Kb). It has almost certainly been growing in the same place for a long time.

Specimens examined. Kb: Kontiolahti, Kontioniemi, in front of the former hospital on the roadside (69633:36434) 1999 [HØ JR ER].

**Taraxacum microlobum** Markl.
Teuvo Ahti collected this species in Ilomantsi, Putkela (Kb) on the northern shore of Suokonjärvi at a lakeside campsite in 1959. I have not visited the locality. In neighbouring provinces it has been found in Punkaharju (Sa), Joroinen, Kuopio and Maaninka (Sb).
Section Boreigena

Taraxacum crassipes H.Lindb.
This species is very rare in Finland. Found to be scattered and sparse by Sonck in Lieksa, with 32 localities. It has completely disappeared or is very rare in the study area today. Obviously it was declining already in the 1930’s. In addition to Lieksa there are old observations by Oesch in Tohmajärvi in 1914, Linkola in Kitee in 1915, Suutarinen in Nurmes in 1937 and Koistinen in 1969, Marklund in Joensuu in 1944, Sonck in Kaavi and Säyneinen in 1947. All Kb. It has been collected by Pettersson in Parikkala (Kl/Fin) in 1932. I have observed it in neighbouring province Sb, in Vieremä.

Taraxacum galeatum Dahlst.
Kyyhkynen collected this species in Rautavaara (Kb) in 1919. No other records. I have observed it in Ok, from which there are many old collections. This species is more frequent in northern Finland.

Section Hamata

Taraxacum fusciflorum H.Øllg.
This species was described in 1983 (Øllgaard 1983). I have found it in Joensuu, with 20 individuals on a few square meters. The species is here a recently established alien and still expanding. Elsewhere in Finland it is known only in the city of Tampere (H). The oldest specimen was collected in 1910 by Florström.

Specimens examined. Kb: Joensuu, Linnunlahti, Heinäpurontie, roadside lawn, opposite to Pajutie (69472:36400) 2002 [JR].

Taraxacum hamatiforme Dahlst.
In the 1940s Sonck found only one plant in Lieksa, Tiensuu, and in 1979 he collected this species in Lieksa, Vuonislathi. Elsewhere in eastern Finland it has been found earlier only in Savitaipale (Sa) and Hyrnylsalmi (Ok). Today it is slightly more frequent. I have found it from both Kb and Kl/Fin, in six municipalities. It is usually sparse, but in Rautavaara (Kb) it belongs to the most common dandelions. In neighbouring provinces I have found it in Mikkeli (Sa) and Vehmersalmi (Sb).


Taraxacum hamatum Raunk.
In eastern Finland this species has been known only from Hyrnylsalmi (Ok). I have observed it only in three localities, Ilomantsi, Joensuu and Värtsilä (Kb). It was the most common species in Ilomantsi. In Ilomantsi it may be a polemochore; elsewhere it is a recently established alien.

Section Borea

**Taraxacum apicatum** Brenner (syn. *T. jaervikylense* H.Lindb.)
This species is a looser in competition between dandelions. Sonck found it in Lieksa in about 90 localities. It has been known from Parikkala and Simpele (KI/Fin), and from Joensuu, Kitee, Käävi, Nurmes and Säyneinen (Kb). I have found it in only three localities. In Kb (Kontiolahti, Kontioniemi) it is still frequent, elsewhere sparse.

Specimens examined. Kb: Joensuu, Linnunlahti, Botania, shaded lawn at the back side of the botanical garden (694705:364001) 2008 [JR]; Joensuu, Käpykangas, Kaltimontie 1, roadside (69491:36423) 2009 [JR]; Kontiolahti, Kontioniemi, in front of the former hospital, old lawn (69632:36434) 1997 [JR].

**Taraxacum atricapillum** Sonck
This species was described by Sonck (1983) based on at specimens collected in Inari (Li). During the past few years it has been found in various parts of Finland, and it is known from three localities in Kb. In Outokumpu it is rather frequent, and individuals were observed both with and without pollen. No earlier observations from Kb.


**Taraxacum atrimarginatum** H.Lindb.
This species seems to have disappeared almost completely from the study area. Sonck discovered about 110 localities, and it was both frequent and common. Collected by Sonck also in Rautavaara (Kb) in 1947, by Pettersson in Simpele (KI/Fin) in 1933. Elsewhere in eastern Finland it has been collected earlier in more than ten municipalities. I have found it once in Joensuu (Kb).

Specimens examined. Kb: Joensuu, Sirkkala, Kettuvaarantie, S roadside, beside the chipboard mill of Schuman (69472:36427) 1998 [JR].

**Taraxacum biformatum** H.Lindb. (syn. *T. albicollum* Dahlst.)
This species was found to be fairly sparse by Sonck in Lieksa, with six localities. There are old collections from the neighbouring provinces Sa, Sb and Ok. Not seen by me. It occur still in southern Finland, unlike most other species of this section, which are distributed mainly in the north today.

**Taraxacum boreum** Dahlst.
Sparse in Kontiolahti (Kb) in 2001. A recent invader. I estimate that this population is about 20 years old, as the growing site has been stable. The nearest locality is in Ok.


**Taraxacum caespitans** Dahlst.
Sonck found this species to be sparse to fairly sparse in Lieksa, with four localities. There are some old observations from Kitelä (KI/Rus), Sa and Ok. Not seen by me. It is possible that species of section *Taraxacum* have out competed it. Extant populations are known from northern and southern Finland.
**Taraxacum canaliculatum** H.Lindb.
Like most species of this section, *T. canaliculatum* has declined strongly. Sonck found it in over 100 localities in Lieksa. In addition, it has been known from Kaavi, Säyneinen and Nurmes (Kb), and from Simpele (KI/Fin). There are many collections from neighbouring provinces. I have collected it in five municipalities in northern Kb. It seems to have declined especially in southern Kb, because in Ok I have observed it in many places. I have made recent observations also in Suonenjoki and Nilsiä (Sb) and Kannonkoski (Tb).


**Taraxacum constrictifrons** Markl.
Collected in the study area only in Simpele (Kl/Fin), by Pettersson in 1933. From neighbouring provinces there is one collection by H. Lindberg in Joroinen (Sb) in 1911.

**Taraxacum cuspidatum** Markl.
This species was described based on at specimens collected by Marklund in Sortavala (Kl/Fin) in 1910, today Kl/Rus. Known earlier also from Ruskeala (Kl/Rus) and neighbouring province Sb, in Joroinen. I have found it to be frequent in Joensuu in one locality, in a small uncut lawn. It might have been growing there for decades, although the environment has changed much.

Specimens examined. Kb: Joensuu center, Rantakatu 4, lawn between the backyard and a cycle way (694707:364228) 2008 [JR].

**Taraxacum distantilobum** H.Lindb.
Collected by Pettersson in Simpele (Kl/Fin) in 1933. In neighbouring provinces collected by H. Buch in Savitaipale (Sa) in 1909, by H. Lindberg in Joroinen (Sb) in 1911, and by A. Railonsala in Kajaani (Ok) in 1955. No recent observations in the study area.

**Taraxacum explicatum** Hagl.
Collected by Pettersson in Simpele (Kl/Fin) in 1933, and by Arvonen in Sortavala (Kl/Rus) in 1910. There are no other observations in the study area or neighbouring provinces.

**Taraxacum guttulatum** H.Lindb. ex Puolanne
This species was found to be quite common by Sonck in Lieksa, with nearly 100 localities. Elsewhere in the area it has been collected in Joensuu, Nurmes and Säyneinen (Kb) and in Simpele (Kl/Fin). Nowadays this species is rather rare. Collected by me in six localities, mainly in 1980's. Formerly *T. guttulatum* was confused with *T. septentrionale*.

Specimens examined. Kb: Joensuu, Raatekangas, cross of Kajaanintie and Raatekankaantie, roadside lawn (69501:36427) 1988 [JR]; Joensuu, Käpykangas, by the ring road between Kajaanintie and railway, N-side of the cycle way, under the 110 kV power line (69486:36428) 1989 [JR]; Kontiolahti, Kontioniemi, behind the former hospital, old lawn (69633:36434) 1999 [HO JR ER]; Lieksa, Ruunaa, Homppa, among tall grasses by garden road (70406:36691) 1988 [JR CES]; Lieksa, Ruunaa, Mattila,

Fig. 7. *Taraxacum boreum* in Kontiolahti (Kb), apparently in the southernmost locality in Finland.
garden lawn (70346:36683) 1988 [JR CES]; Liperi, Viininjärvi, orthodox church, garden lawn (69512:36141) 2005 [JR PO].

**Taraxacum hamosiforme** Railons.
Sparse in Joensuu in 2007, but already next year it was clearly more frequent. Found in Pori (St) in 2005, and in Tampere (Ta) there are many localities.

Specimens examined. Kb: Joensuu, center, Siltakatu, by the western bridge at the underpass of cycleway (69470:36422) 2007 [JR].

**Taraxacum humile** Brenner (syn. *T. remotijugum* H.Lindb.)
This species has declined very much. Sonck found it in Lieksa in nearly 70 localities. Elsewhere in eastern Finland only in Säyneinen (Kb) and Simpele (Kl/Fin). I have recorded *T. humile* in seven localities (Kb). Usually sparse, but common in Tohmajärvi, Onkamo. In Ok it is still frequent.


**Taraxacum karelicum** H.Lindb. & Markl.
The species was described based on at specimens collected by Marklund in Sortavala (KI/Rus today) in 1910. In Sortavala it was collected earlier often. Sonck found it to be sparse in Lieksa (Kb), with only two sites. Marklund and Sonck collected it in Joensuu in 1944. Also known from Sb and Ok. Nowadays rare. I have found it in four localities, of which three in Joensuu. Scattered and sparse.


**Taraxacum laceratum** (Brenner) Brenner (syn. *T. parvuliceps* H.Lindb.)
This species was found to be rare and sparse by Sonck in Lieksa, with only two localities. In Kl/Rus it has been collected earlier in Sortavala and Käkisalmi [Priozersk]. Also known from Sa, Sb and Ok. In the study area it is currently known only from Kontiolahti, Kontioniemi (Kb), where it is frequent on a lawn that was established probably during the 1930s to former hospital.


**Taraxacum lojoënse** H.Lindb.
No previous data. I found this species to be frequent in Joensuu in 1997 (this site was built over in 2001). In 2002 it was sparse.

**Taraxacum melanostigma** H.Lindb.
I found this species as new to Kb in Joensuu in 2002. Collected elsewhere in eastern Finland by Heikkinen in Kajaani and Paltamo, Oo, in 1957.

Specimens examined. Kb: Joensuu, center, Kalastajankatu 18, lawn at the S-side of the house, sparse (69466:36414) 2002 [JR].

**Taraxacum mucronatum** H.Lindb.
This species was found to be abundant and frequent by Sonck, with 120 localities in Lieksa. Today almost disappeared. Collected earlier by Europaeus and Hällström in Liperi in 1872, by Marklund in Joensuu in 1944, by Sonck in Kaavi and Säyneinen (Kb) in 1947, and by Petterson in Simpele (Kl/Fin) in 1933. I have found two localities in Joensuu in the 1980s, but plants have disappeared later. Recorded by me in Vehmersalmi (Sb) in 2007.

Specimens examined. Kb: Joensuu, center, Rantakatu 31, lawn at S-side of conservatory (69473:36422) 1986 [JR]; Joensuu, Käpykangas, by the ring road, between Kaajaantie and railway at N-side of cycle way under the 110 kV power line (69486:36428) 1989 [JR].

**Taraxacum ostenfeldii** Raunk. (syn. *T. duplidens* H.Lindb.)
Exceptionally to species in this section, *T. ostenfeldii* has not declined. Sonck observed it in 18 localities, with numerous individuals in Lieksa. Recorded also in Joensuu, Pyhäselkä and Rautavaara (Kb) and Simpele (Kl/Fin). I have found it in 11 municipalities in Kb (Kesälahti, Värtsilä, Pyhäselkä, Rääkkylä, Liperi, Outokumpu, Joensuu, Kontiolahki, Ilomantsi, Lieksa and Valtimo) and in Saari and Simpele (Kl/Fin). It is locally frequent, especially in Joensuu.

**Taraxacum pastiniferum** Railons.
Poorly known species usually placed in section *Taraxacum*. Railonsala (1976, 1977) described it based on at specimens collected in Kristiina (Oa). He collected it also in Obu. No other old records. I have collected it in Joensuu in 1986 and after years of cultivation succeed to identify it. Since that it has been collected here and there in Finland. Probably the distribution area of *T. pastiniferum* has earlier been continuous and wider in Finland, like those of most other species of section Borea.

Specimens examined. Kb: Joensuu, Linnunlahti, Pajutie 1 B 4, lawn, W-side of the house (69471:36401) 1986 [JR].

**Taraxacum penicilliforme** H.Lindb.
This species was found to be most common and frequent dandelion by Sonck in Lieksa, with 200 localities. Collected earlier also in Pyhäselkä, Joensuu, Kaavi, Säyneinen and Nurmes (Kb), in Simpele and Parikkala (Kl/Fin). Since then it has rapidly declined in its southern distribution range, not seen by me in Kl/Fin or southern Kb. Collected recently in Kb in Kesälahti, Pyhäselkä, Joen-
suu, Liperi, Outokumpu, Polvijärvi, Kontiolahti, Eno, Ilomantsi, Lieksa, Juuka, Säyneinen, Rautavaara, Nurmes, and Valtimo. It is usually sparse but still frequent in some remote localities.

*Taraxacum pullum* Markl. ex Puolanne
No earlier observations in the study area. Collected by me once in Joensuu. This species has been confused with *T. lojoënse*, which differ by its leaf shape. *T. pullum* occurs both with and without pollen, whereas *T. lojoënse* is always without.


*Taraxacum scalare* H. Øllg. & J. Räsänen
This species has been collected in many municipalities since 1910, but it has been identified as *T. triangulare*. It was recently described by Øllgaard and Räsänen (2008). Marklund collected it in Joensuu in 1910, in Kitee, Matkaselkä (*Kb/Rus*) in 1910, in Sortavalta by Marklund and Arvonen (*KI/Rus*) in 1910, and by Heikkinen in Hyrynsalmi (*Ok*) in 1958. Since 1998 it has been found regularly in Kontiolahti (*Kb*). Always sparse. In neighbouring province *Sb* I have collected it in Niilsiä in 2005.


*Taraxacum subpenicilliforme* H.Lindb. ex Dahlst.
Found by Sonck in two localities in Lieksa and in one by Marklund in Joensuu (*Kb*) in the 1940s, and by Pettersson in Parikkala and Simpele (*KI/Fin*) in 1933. It is known from all neighbouring provinces. Not found by me.

*Taraxacum triangulare* H.Lindb.
This species was found to be sparse or fairly sparse by Sonck in Lieksa, with 23 localities. Collected earlier also in Pyhäselkä, Joensuu, Kaavi and Säyneinen (*Kb*). Today scattered in *Kb*: Tohmajärvi, Pyhäselkä, Kiihtelysvaara, Joensuu, Liperi, Polvijärvi, Outokumpu, Ilomantsi, Eno, Lieksa, Juuka and Säyneinen. Rare in *Saari* (*KI/Fin*).

Section *Macrodonta*

*Taraxacum tenebricans* (Dahlst.). Raunk.
This species was found to be common by Sonck in Lieksa, with 80 localities. Collected earlier also in Pyhäselkä, Joensuu, Kaavi and Säyneinen (*Kb*). Today scattered in *Kb*: Tohmajärvi, Pyhäselkä, Kiihtelysvaara, Joensuu, Liperi, Polvijärvi, Outokumpu, Ilomantsi, Eno, Lieksa, Juuka and Säyneinen. Rare in *Saari* (*KI/Fin*).

Section *Taraxacum*

*Taraxacum acidiiforme* Railons. (syn. *T. pilosella* Lundev. & H. Øllg.)
Described based on at specimens collected in Kaskinen (*Oa*) in 1957 (Railonsala 1960). Collected by Lundevall in Parikkala (*KI/Fin*) in 1991. Elsewhere in Finland observed in Oulu (*Obo*) and Pello (*Obu*), where it is common like in the adjacent province of Norrbotten in Sweden (Räsänen 2005). In Sweden it was earlier named *T. pilosella* until Øllgaard noticed in 2010 that this name is a synonym of *T. acidiiforme*.

*Taraxacum acroglossum* Dahlst.
This species was collected by Sonck in Lieksa and Joensuu in 1974. These specimens were identified in the 1990s. Collected by Heikkinen & Sältin in Hyrynsalmi (*Ok*) in 1965. Sältin (1965) identified these specimens as *T. praeradians*. Today it is fairly common in *Kb*, where it has been found in 17 municipalities (frequent e.g. in *Eno*, Juuka and Uimaharju). It occurs both in countryside and in urbanized areas.

*Taraxacum acrolobum* Dahlst. (syn. *T. paradoxum* Palmgr.)
Sältin (1965) knew this species only from Al. Sparse in Tohmajärvi, Onkamo (*Kb*), and in Kot-
ka, Kymi railway station (Ka). The distribution area perhaps continues eastwards, as during the Second World War it was collected in Karelia olo-

etsensis in Russia on the east side of Lake Lado-
gä (Sennikov 2007).

Specimens examined. Kb: Tohmajärvi, Onkamo, lawn by the cross of highway 6 and road 70 (69155:36622) 2007 [JR].

**Taraxacum acutangulum** Markl.
Collected by Pettersson in Simpele (Kl/Fin) in 1933. There are old observations from neighbouring provinces, by Sonck in Kuopio (Sb) in 1943 and by Heikkinen in Hyrynsalmi (Ok) in 1958. Recently observed by me in three localities in Kb, and in Juankoski (Sb) in 1997 and Hyrynsal-
mi (Ok) in 1999.

Specimens examined. Kb: Joensuu, Linnunlahti, Kuusitie, roadside lawn (69472:36402) 1999 [HØ JR ER]; Lieksa, Lamminkylä, roadside lawn by the cross of road 73 and Lamminkylantie (70249:36541) 1988 [JR]; Outokumpu, Kuusjärvi, roadside by the road 17, beside the church (69566:35985) 2005 [JR PO].

**Taraxacum aequilobum** Dahlst.
This species was found to be fairly rare by Sonck in Lieksa, with 14 localities. Today it is one of the most common and frequent species in the study area. Other old collections are from Joensuu by Sonck and Marklund in 1944 and by Pettersson in Simpele (Kl/Fin) in 1933.

**Taraxacum aethiops** Hagl.
Sonck found this species in Lieksa (Kb) in 1947, and Marklund and Sonck in Joensuu (Kb) in 1944. Elsewhere in eastern Finland it has been collect-
ed in by Kyyhkynen Maaninka (Sb) in 1946 and by Railonsala Kuhmo (Ok) in 1957. One recent collection.

Specimens examined. Kb: Kontiolahti, Asemantie, roadside lawn by the cross of road 5051 and Asemantie (69616:36457) 1997 [JR].

**Taraxacum alatum** H.Lindb.
Only two observations by Sonck in Lieksa. Marklund and Sonck found it in Joensuu in 1944, and Lundevall in Parikkala (Kl/Fin) in 1991. I have collected it in Kb and Kl/Fin in 21 municip-

Pions. Kb: Tohmajärvi, Onkamo, lawn by the cross of highway 6 and road 70 (69155:36622) 2007 [JR].

**Taraxacum alissimum** H.Lindb.
Sonck found this species in five localities in Lieksa. Observed by me in ten municipalities in Kb. Its abundance seems to have been stable. As a large plant, this species is competitive with oth-
er tall grasses.

Specimens examined. Kb: Eno, Uimaharju, center, roadside (68930:36501) 2005 [JR]; Ilomantsi, Möhkö, iron works manor, high grass,SW-side of the house (69558:37200) 1999 [HØ JR]; Joensuu, center, Papinkatu, garden lawn (6946:36391) 2007 [JR VL]; Kesälahti church village, Kylänkangas, lawn by highway 6 near Esso service station (68695:36479) 2000 [JR]; Ki-televaara church village, roadside (69361:36679) 2000 [JR]; Kitee (Anttola), center, road side lawn, N-side of the cross of Kiteentie and Puhoksentie (68925:36633) 1999 [HØ JR ER]; Lieksa, Märäjälahti, Revonniemi, lawn by the side of road 5071 (70211:36539) 1989 [JR]; Lieksa, Kylänlahti, high grass by the roadside, cross of road 5261 and former school (70322:36373) 1999 [HR JR]; Nurmes, Höljäkkä, railway station, garden lawn (70121:36539) 1989 [JR]; Lieksa, Kylänlahti, high grass by the roadside, cross of road 5261 and former school (70322:36373) 1999 [HØ JR]; Nurmes, Höljäkkä, railway station, garden lawn (70415:36220) 2000 [JR]; Outokumpu, Porola, Jokiranta, by the hay field, by the road 504, the NW-side of the house (69627:36082) 2000 [JR]; Tohmajärvi, Onkamo, road 70, roadside lawn, by the school (69152:36635) 2008 [JR]; Tohmajärvi, Ak-
kala, Akkalantie, roadside, by the house of the youth asso-
ciation (69028:36704) 2008 [JR].

**Taraxacum amaurolepis** Markl.
This species was collected by Sonck in Lieksa (Kb) in 1981. Elsewhere in Finland it has been observed mainly in the south-west, west of Hel-
sinki, in Tampere area, and south of Pietarsaari (Om). Once collected at Li. Collected by me once in Joensuu.

Specimens examined. Kb: Joensuu, Linnunlahti, Kuusitie, roadside lawn (69470:36427) 1999 [HØ JR EL]; Lieksa, Lammin
tyntä, roadside lawn by the cross of road 73 and Lammin 
tyntä (70249:36541) 1988 [JR]; Outokumpu, Kuusjärvi, roadside by the road 17, beside the church (69566:35985) 2005 [JR PO].

**Taraxacum amplum** Markl.
Common and frequent in the area, especial-
ly among tall grasses, but not on park lawns. It is sometimes the dominant dandelion on fallow 
fields. In Sonck’s time it was rarer in Lieksa, with 13 localities. Found by Lundevall in Simpele (Kl/Fin) in 1991.

**Taraxacum ancistrolobum** Dahlst.
No old observations. Nowadays this species is frequent in Lieksa and rather frequent in Joensuu, elsewhere usually fairly rare. I have collected it in Kb in six municipalities.

**Taraxacum angustisquameum** Dahlst. ex H.Lindb.

This species was found to be sparse by Sonck in Liekas, with only three localities. Collected in neighbouring provinces Sb (Jäppilä, Suonenjoki and Joroinen) and Ok (Kajaani, Hyrynsalmi and Paltamo). I have found it in 13 municipalities in Kb, and in 3 in Kl/Fin. Usually sparse.

**Taraxacum arrenhii** Palmgr.

This species was collected only once in Liekas by Sonck. It seems to have gradually become more common. Found by me in seven municipalities in Kb. Sparse to frequent. Area of its abundance in Finland is south of Kb.


**Taraxacum assurgens** Markl.

This species was found by Sonck in seven localities in Liekas. Liekas and Säyneinen are the northernmost municipalities where *T. assurgens* has been observed in Finland. It has been collected by Lundevall in Parikkala (Kl/Fin) in 1991, and earlier by Marklund in Sortaval (Kl/Rus) in 1910. It seems to favour traditional countryside grasslands, and to avoid modern park lawns. Its frequency increases towards south in the study area. In Kb I have collected it in 12 municipalities. Rather frequent in Kl/Fin.

rala, roadside lawn, by the railway station (69017:36877) 1999 [HØ JR ER].

**Taraxacum biforme** Dahlst.
This species has always been rare and sparse in the study area. Sonck found it in two localities in Lieksa. Two old observations are known from both Sa and Sb. I have three observations from Kb, and few from neighbouring province, Juankoski in 1997 and Vieremä in 2004 (Sb).

Specimens examined. **Kb**: Joensuu, center, Kalastajankatu 8, S side of the house, by the railway station (69017:36877) 1999 [HØ JR ER]; Värtsilä, Niirala, roadside lawn near the railway station (69017:36877) 1999 [HØ JR ER]; Värtsilä, Niirala, Rajantie, roadside (69018:36871) 2005 [JR PO].

**Taraxacum bisectum** Malmio
Found by me once, in Joensuu on a lawn. It disappeared later, due to the habitat change. It was previously known only from Naantali (Ab), collected in 1940.

Specimens examined. **Kb**: Joensuu, center, Kalastajankatu 8, S side of the house, on a lawn (69465:36417) 1997 [JR].

**Taraxacum boreophilum** H.Lindb.
This species was described based on at cultivated material grown from seeds collected in Ok, Suomussalmi, (Lindberg 1944). Elsewhere in Finland only a few collections are known, from Raatalampi (Tb), Suonenjoki (Sb) and Tornio (Obu). I have found it in Joensuu (Kb) and in Uukuniemi (Kl/Fin). Sparse. I have collected it also elsewhere in eastern Finland Sb, Leppävirta in 1998 and Nilsä in 2005. This species is often difficult to identify in field and may be more common than observed.


**Taraxacum borgvallii** Dahlst. ex Hagl.
This species was found to be very rare by Sonck in Lieksa, with only one locality. There is also one collection from each neighbouring province. This species has been discovered by me in several localities in Joensuu and once in Outokumpu.


**Taraxacum breviflorum** Dahlst.
I found this species in 1988 in Joensuu. It still occurs on the same place, as a dominant dandelion. It is known also in the nearby localities in the city, and further away in Joensuu from Raatekangas. In neighbouring provinces it is recorded only in Ok, by Heikkinen in 1957, 1958 and 1965 (OULU).


**Taraxacum caloschistum** Dahlst.
This species was found to be frequent by Sonck in Lieksa, Kylänlahti in 1946 and 1947, where it was still growing in 1988. It was collected by Arvonen in Kajaani (Ok) in 1912. In Kb I have found it only in Joensuu and Kontiolahti. It is usually sparse, but common in Joensuu along Papinkatu in 2002. It has always been rare in eastern Finland.


**Taraxacum caloschistum** Dahlst.
This species was found to be frequent by Sonck in Lieksa, Kylänlahti in 1946 and 1947, where it was still growing in 1988. It was collected by Arvonen in Kajaani (Ok) in 1912. In Kb I have found it only in Joensuu and Kontiolahti. It is usually sparse, but common in Joensuu along Papinkatu in 2002. It has always been rare in eastern Finland.

Taraxacum canentifolium Markl.
I collected it in Kb in 1990, but the population is probably older. As it seems to be unable to disperse to new lawns, it may have no future.

Specimens examined. Kb: Kontiolahti, Kontioniemi, old lawn, in front of the former hospital (69632:36434) 1999 [HØ JR ER].

Taraxacum canoviride H.Lindb. ex Puolanne
Collected by Sonck in Karttula (Sb) in 1943 and Tuusniemi (Sb) in 1947 and by Lundevall in Imatra (Sa) in 1991. I have collected it four times in Kb. Very rare.

Specimens examined. Kb: Ilomantsi, Möhkö, dry field, by the channel, W-side of the main road (69558:37198) 1997 [JR]; Joensuu, Raatekangas, roadside lawn at the cross of Kajaanintie and Raatekankaantie (69501:36427) 1988 [JR]; Rääkkylä, church village, on high grassland by PKS power line (69141:36365) 1999 [HØ JR ER]; Outokumpu, Kuusjärvi, roadside by the road 17, beside the church (69566:35986) 2000 [JR].

Taraxacum capillosum H. Øllg. & Uhlemann
Recently described by Øllgaard & Uhlemann (2007). I have collected it three times in Kb. Frequent in Kitee. Elsewhere in Finland it has been found in Juankoski, Valkeinen (Sb) in 1997, in Föglö, Degerby (Al) in 2001, and in Ristiina (Sa) in 2009.

Specimens examined. Kb: Kitee, center (Anttola), center, roadside lawn of by-road, N-side of the cross of Kiteentie and Puhoksentie (68925:36633) 1999 [HØ JR ER]; Kontiolahhti, Lehno, Nurmeskentie 24 B, roadside lawn, by the crossroad to the house (69524:36444) 1997 [JR]; Tohmajärvi, Kemie, lawn, SW-side of the road to Niiralta, near the service station (69066:36735) 1999 [HØ JR ER].

Taraxacum carptum H. Øllg. & J. Räsänen
Recently described based on at specimen collected in Joensuu (Øllgaard & Räsänen 2008). First collected in Finland from Helsinki in 1925, identified as T. retroflexum, to which it is closely related. I have found T. carptum in six municipalities in Kb and in Parikkala (Kl/Fin). In Joensuu it is common, but usually rather sparse, as elsewhere in the area. On Rantakatu (Joensuu) by the former library it was frequent, but it disappeared in the 1990s due to renovation of the building. It is distributed also in Sweden and Denmark.


Taraxacum caudatulum Dahlst.
This species has always been rare in the study area, found once by Sonck in Lieksa. Marklund collected it in Joensuu in 1944. Few observations are from Kouvola and Imatra (Sa), Suonenjoki, Maaninka and Niilsiä (Sb), and Kajaani (Ok). I have found it once in Joensuu.

Specimens examined. Kb: Joensuu, Lunnunlahti, S-side of pedestrian way, on lawn (6947:3640) 1988 [JR].

Taraxacum coartatiforme J. Räsänen
This species is described in this volume (Räsänen 2013). Many specimens have been collected since 1986 (e.g. in Ta), but there is only one collection from the study area.

Specimens examined. Kb: Joensuu, Lunnunlahti, Pajuatie, roadside lawn (69472:36401-2) 1986 [JR].

Taraxacum coartatum Hagl.
Not known to Sonck, although he collected it in Lieksa (1945). That specimen was identified by Øllgaard in 1997. Later Øllgaard re-identified Sonck’s all collections of T. subalatum as this
species. Sonck collected it also in Hyrynsalmi (Ok) in 1981. I have found it from 11 municipalities in Kb and Kl/Fin. Although widely distributed, *T. coartatum* is scattered. It gives an impression of being a rather recent alien, which is currently spreading in the area. Frequent in some localities.


**Taraxacum contractum** Markl.

There is one collection by Sonck in Lieksa in the 1940s, and one (Lieksa, Koli) in 1981. No other previous observations from the study area and only a few from neighbouring provinces. Nowadays it is common but yet not ubiquitous. I have found it in more than 30 localities. Usually frequent. It is probably still spreading.

**Taraxacum copidophyllum** Dahlst.

There is only one collection, by Sonck in Parikkala (Kl/Fin) in 1974. Kyyhkynen collected it in Maaninka (Sb) in 1946, and Heikkinen made many collections in Hyrynsalmi (Ok) in 1954.

**Taraxacum cordatum** Palmgr.

Collected previously from eastern Finland by Heikkinen in Kajaani in 1956, Paltamo and Hyrynsalmi in 1962 (all Ok). Nowadays this species is a rare established alien on park lawns and road-sides in Kb.


**Taraxacum crebridens** H.Lindb.

Rare in eastern Finland. Collected by Sonck in Parikkala (Kl/Fin) in 1982, and by H. Lindberg in Joroinen (Sb) in 1911. I have found it once, in Lieksa, where it seems to be a recent alien.

Specimens examined. Kb: Lieksa, center, park lawn, E-side of Torikatu, on the district heating pipe (70278:36516) 2002 [JR].

**Taraxacum crispatum** Dahlst.

In eastern Finland this species was earlier known only from Ok collected by Heikkinen in 1960, 1962, 1968 (OULU). When I moved to my present home in Joensuu, the garden lawn was sown, and many rare dandelions were introduced. *T. crispatum* was one of them.

Specimens examined. Kb: Joensuu, Linnunlahti, Pajutie 1 B 4, garden lawn, W-side of the house (69472:36401) 1988 [JR].

**Taraxacum crispifolium** H.Lindb.

In eastern Finland this species has been collected by Lindberg in Joroinen (Sb) in 1911. Like the previous one, I have observed it only in my home garden, and only once.
Specimens examined. Kb: Joensuu, Linnunlahti, Pajutie 1, lawn, S-side of the house (69472:36401) 1986 [JR].

**Taraxacum croceiflorum** Dahlst.
This species was collected by Sonck in Lieksa (Kb) in 1946 and Tuusniemi (Sb) in 1947, by Pettersson in Simpele (Kl/Fin) in 1933, and by Lindberg in Imatra (Sa) in 1911. I have found it in five municipalities in Kb. Sparse to fairly sparse.


**Taraxacum cuspidifrons** Markl.
According to Såltin (1965) this species have been recorded in Kl/Fin, but the respective specimen has not been found in H. It might have been collected from Kl/Rus but such material was not traced (Sennikov 2007). I have found it twice in the study area.


**Taraxacum cyanolepis** Dahlst.
Collected in eastern Finland by Heikkinen in Kaajaani (Kn) in 1952. I have found tens of individuals in Lieksa. Probably a recent casual alien.


**Taraxacum diastematicum** Markl.
Described based on at specimens collected in Oulu (Marklund 1940). Collected in eastern Finland by Fagerström in Vehkalahti (Ka) in 1969 and by Heikkinen in Hyyrynsalmi (Ok) in 1962. It seems to have spread from the south to the study area, yet not observed in the northernmost municipalities. However, it is spreading also in Kn. I have found it in ten municipalities in Kb and in two in Kl/Fin.


**Taraxacum dilaceratum** M.P. Chr.
The species belongs to the specialities of my garden. It is rare in Finland. Sältin (1965) mention it only from Ab. Collected by Sonck in Li in 1984.

Specimens examined. Kb: Joensuu, Linnunlahti, Pajutie 1 B 4, garden lawn, W-side of the house (69472:36401) 1988 [JR].

**Taraxacum dilatatum** H.Lindb.
This species has been collected both by Heikkinen and Sältin in Hyyrynsalmi in 1965. I have collected it once.

Specimens examined. Kb: Joensuu, Linnunlahti, Pajutie 1 B 4, garden lawn, W-side of the house (69472:36401) 1988 [JR].

**Taraxacum distinctilobum** H.Øllg.
Discovered in Finland for the first time in Marikarvia (Oa) in 2005 (Räsänen 2007). Later I have found it also in Kb. It is spreading very aggressively in Denmark (Øllgaard, pers. comm.) and perhaps the same will happen in Finland.

Taraxacum ekmanii Dahlst.
This species was found to be rare and sparse by Sonck in Lieksa, with seven localities. Marklund collected it in Joensuu in 1944. In neighbouring provinces there are many old collections from both Sb and Ok. Nowadays *T. ekmanii* is common. I have observed it in more than 30 localities all over the study area. Sparse to rather frequent, but it is not dominating anywhere.

Taraxacum flavostylum Bäck
This species was collected in the study area for the first time in 2001. Elsewhere in Finland collected by Bäck in Oa in 1968, and I found it in Anjalankoski (N) in 2007.

Specimens examined. Kb: Joensuu, Linnunlahti, Pa- jutie 1 B, lawn between the house and the road, sparse (69472:36401) 2001 [JR].

Taraxacum florstroemii Markl.
This species was found to be fairly rare by Sonck in Lieksa, with seven localities. I have found it in two localities in Lieksa. It has always been rare in the area.

Taraxacum erici H. Øllg. & J. Räsänen
Recently described based on at specimens collected in Kb, Ilomantsi (Øllgaard & Räsänen 2008). In Möhkö museum area it is one of the most abundant dandelions. It has been discovered also in many localities in Joensuu. Usually sparse to scattered. It was very frequent by the former library in Joensuu, but it disappeared due to renovation of the building. Favours old lawns.


Taraxacum exacutum Markl.
Known earlier only in N. I have collected it in three localities in Joensuu. Rather sparse recently established alien.


Taraxacum fasciatum Dahlst.
This species was found to be sparse to fairly frequent by Sonck in Lieksa, with over 50 localities. Nowadays it is one of the most common dandelions in the study area. It has been found in nearly 60 localities.
**Taraxacum glossocentrum** Dahlst.
Sonck collected this species in three localities in Lieksa, and Lundevall in Parikkala (Ki/Fin) in 1991, by Sonck in Suonenjoki (Sb) in 1943, and by Heikkinen in Kajaani (Ok) in 1962. I have found it only twice in Joensuu. Sparse.


**Taraxacum glossodon** Sonck & H. Øllg.
I have found this recently described species (Sonck & Øllgaard 1999) in Joensuu and Kitee (Kb) and in Suomussalmi it was sparse in church village and in Ala-Vuokki scattered (Ok) in 2001, and south of the study area in Jaala (Ta) in 2010 and Anjalankoski (N) in 2007. It is locally common in southern Finland.


**Taraxacum gracilisquameum** Markl.
No previous observations. I have found this species in 15 municipalities in Kb and in Saari (Ki/Fin). It seems to be absent in N, NW and S parts in the study area. Sparse to scattered.


**Taraxacum gustavianum** Sonck
Sonck (1988) described this species based on material collected in Lieksa, Tynnyrivaara in 1946, and recollected it in Lieksa, Ala-Laukanvaara in 1981. Later T. gustavianum have been collected by Lundevall in Parikkala and Simpele (Ki/Fin) in 1991, and by Heikkinen in Hyrynsalmi (Ok) in 1963. It has proved to be common and locally frequent in most of the study area, with over 70 localities. It occurs in all four municipalities in Ki/Fin, and seems to be lacking only in the NW Kb. The NW limit of its distribution follows the line connecting Lieksa, Kontiolahti, Polvijärvi and Liperi. Recently found in many localities also elsewhere in Finland and in Sweden.

**Taraxacum haematopus** H. Lindb.
This species was collected by Sonck in Lieksa, Salonkylä, Ala-Laukanvaara in 1981. In neighbouring provinces from Lappeenranta (Sa) by Buch in 1908 and from Kajaani (Ok) by Railonsala in 1955. No recent observations in the study area.
**Taraxacum haptolepium** Malmio

Malmio (1953) described this species based on at specimens in Joensuu by Marklund in 1944. Collected by Sonck in Lieksa in one locality, and by Pettersson in Simpele (KI/Fin) in 1932. Sonck named his specimen provisionally as *T. obscurifolium*, but he never described it. It is scattered in Kb and KI/Fin, being usually sparse to fairly sparse, but in Parikkala (KI/Fin) it is one of the dominant dandelions, first collected by Lundevall in 1991. In neighbouring provinces collected by Sonck in Jäppilä (Sb) in 1948, and I have found it in Hyrynsalmi (Ok) in 1999 and in Nilsiä (Sb) in 2005, and Lundevall collected it in Lappeenranta (Sa) in 1991. Changes in abundances cannot be estimated, because there are only a few older observations from its main distribution area.

Specimens examined. KI/Fin: Saari, Akanvaara, roadside of highway 6, about 1 km S from the cossroads of Uukuniemi (68474:36421) 1998 [JR]; Parikkala, Särkisalmi, Rantatie, lawn, near the lake shore (68356:36323) 1999 [HØ JR ER]; Kb: Ilomantsi, Möhkö, iron works field (69558:37199) 1999 [HØ JR]; Joensuu, Sirkkala, Ket-


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**Fig. 10 A. Distribution of Taraxacum haptolepium (10 B) in the study area. It is more common in the southern part.**
**Taraxacum haraldii** Markl.
In 1971 Bäck identified a specimen collected by Pettersson in Simpele in 1933 as *T. haraldii*. Collected by Lundevall in Parikkala (Kl/Fin) in 1991(S), although the identification is uncertain, and by Sonck in Lieksa, Kylälahti in 1977. It is known also from Joroinen (Sb), where Lindberg collected it in 1911. I have found it in two localities in the study area. Scattered. Perhaps it has spread to Kb along railways, perhaps from southern Finland.

Specimens examined. Kb: Joensuu, Sirkkala, railway station, lawn by the parking place (694699:364270) 2002 [JR]; Nurmes, Höljäkkä, railway station, garden lawn (70415:36220) 2000 [JR].

**Taraxacum hemicyclum** Hagl.
During a 50 years period this species has increased on its abundance from rather sparse to one of the dominant dandelions in the study area. It was found by Sonck in Lieksa only in six localities, but nowadays it grows nearly everywhere, and it is frequent almost in all sites. Marklund collected it in Joensuu in 1944. It is a very persistent. If there is any space between a building and pavement asphalt, an emerging dandelion is often *T. hemicyclum*. It has recently been found to be common also in Helsinki (N), but as the observations are supported only by a few specimens, it it likely that it have became more abundant in the recent decades.

**Taraxacum hepaticum** Railons.
Øllgaard discovered one individual in my garden in 1999, but it was disappeared already in 2002. Later it has been found elsewhere in Joensuu. Collected by Heikkinen in Hyrynsalmi, Kangasjärvi (Ok) several times in 1957–1971 (OULU), and I have found it once in Kuusamo (Ks), in 2009.

Specimens examined. Kb: Joensuu, Sirkkala, railway station, lawn by the parking place (694699:364270) 2002 [JR]; Nurmes, Höljäkkä, railway station, garden lawn (70415:36220) 2000 [JR].

**Taraxacum homoschistum** H. Øllg. (syn. *T. hastatum* Markl. non Brenner)
When *T. hastatum* Markl. was described, he was unaware of older name, *T. hastatum* Brenner. Thus to Marklunds *T. hastatum* was given a new name, and it was compared with the closely relat-ed *T. undulatiflorum* (Øllgaard 2006). No earlier observations have been made in the study area. I have found it twice in Joensuu.


**Taraxacum horridifrons** Railons.
This species is rare in the area. There are two previous collections from Parikkala (Kl/Fin) by Lundevall in 1991. I have found one individual in Säyneinen, and collected it once in Joensuu. Elsewhere in eastern Finland this species has been collected only in Imatra and Taipalsaari (Sa) by Lundevall in 1991, and in Luumäki in 2004 and Joutseno (Sa) in 2007 by me.


**Taraxacum huelphersianum** Dahlst. ex Hagl.
Found by Sonck in two localities in Lieksa, and by Sonck and Marklund in Joensuu in 1944, and by Sonck in Parikkala (Kl/Fin) in 1974. Nowadays it is known from nearly all municipalities both in Kb and Kl/Fin. In many localities it is one of the dominant dandelions.

**Taraxacum idiomorphum** Markl.
In eastern Finland there are older observations only from southern Ka, where this species is still locally frequent. I have found it once in Kb. It seems to be a recently established alien.

Specimens examined. Kb: Joensuu, center, Siltakatu, Siltakatu, lawn at SW-side of the western bridge, sparse (694700:364228) 2008 [JR].

**Taraxacum imitans** H.Lindb. ex Sältin
Collected by Sonck in Lieksa, Vuonoslahti in 1977 and by me in Värtsilä (Kb). Elsewhere in eastern Finland this species is known from Ok only, collected by Railonsala in 1955 and by Heikkinen in 1960 in Kajaani, and by Heikkinen in Paltamo in 1957 and by me in Suomussalmi in 2001.

**Taraxacum inaratum** M.P. Chr.
This species was found in the study area in the 1990s. Nowadays three localities are known in Kb. In neighbouring province Ok it was collected by Räsänen & Øllgaard in Hyrynsalmi in 1999. On the old lawn in Kontioniemi (Kb) it may be a recent casual alien introduced amongst ornamental perennials.


**Taraxacum index** Sonck
Sonck (1964b) described this species based on at specimens he collected in Lieksa, Kylänlahti in 1947. I have collected it in Joensuu, Siihtala in 1986. Today it is known in six municipalities in Kb. Sparse or scattered. The main distribution area of this rather rare species seems to be between Kitee and Joensuu. Outside Kb there is only one observation, I collected it in Vehmersalmi (Sb) in 2007.


Fig. 11 A. Distribution of *Taraxacum index* (11 B) in the study area. All but one localities are in Karelia borealis.
Taraxacum ingens Palmgr.
Sonck found many individuals of this species by Lieksa railway station in 1946, and Heikkinen collected it in Kajaani (Ok) in 1958. Not refound.

Taraxacum insuetum M.P. Chr.
This species was found in Joensuu in 1999 (Räätänen 2009).

Specimens examined. Kb: Joensuu, Linnunlahti, Kuusitie, roadside lawn, sparse (69472:36402) 1999 [HØ JR ER].

Taraxacum intermedium Raunk.
Found for the first time in Finland in Kontiolahti (Kb) in 1999, with tens of individuals (Räätänen 2009). Probably this species have occurred there for a longer period.

Specimens examined. Kb: Kontiolahti, Kontioniemi, old lawn, in front of the former hospital (69631:36434) 1999 [HØ JR ER].

Taraxacum interruptum Dahlst.
This species was found to be sparse by Sonck in Lieksa, Vuonislahti in 1945, with only one specimen. Lundevall collected it in Simpele in 1991. In neighbouring provinces it has been known from Sa and Ok. I have found it in seven municipalities from Kb. Usually scattered and rather rare. It seems to be in the study area one of the older species of section Taraxacum. It does not spread to new habitats.


Taraxacum interveniens Hagl.
I have found this species twice in Kb, and with Øllgaard in Hyrynsalmi, Kangaskylä (Ok) in 1999.


Taraxacum kjellmanii Dahlst.
This species was found to be fairly sparse by Sonck in Lieksa, with only three localities. Collected by Marklund and Sonck in Joensuu (Kb) in 1944, and by Pettersson in Simpele (Kl/Fin) in 1933. In the neighbouring province Sb there are collections from three municipalities. I have not found this species in eastern Finland.

Taraxacum kupfferi Hagl.
According to herbarium specimens this is a very rare species, but it is perhaps more common. It is easily overlooked amongst other dandelions wich have green base in the rosette leaves. Collected by Railonsala in Oa in 1948 (H), first determined as T. kupfferi in the beginning of 1970s. Described from Latvia (Haglund 1937), also known from Estonia, Sweden and Norway. I have found it once in Joensuu.

Specimens examined. Kb: Joensuu, Linnunlahti, Pajutie 1 B 4, garden lawn (69472:36402) 2005 [JR].

Taraxacum laciniosifrons Wiinst.
This species was found to be rare and sparse by Sonck, with only one locality in Lieksa. Collected by Sonck and Marklund in Joensuu in 1944. I have found it in ten municipalities in Kb. It is common in Joensuu, but elsewhere usually sparse or fairly sparse.


**Taraxacum laeticolor** Dahlst.
Sonck discovered some individuals of this species in Lieksa, Kelvä in 1947. In neighbouring province Sa it has been collected by Klingstedt in Valkeala in 1955. I have found it twice in Joensuu. Sparse.


**Taraxacum laticordatum** Markl.
Ollgaard and I found this species in Kb in 1999, with two localities. Sparse.


**Taraxacum latissimum** Palmgr.
This species was found to be rather rare by Sonck in Lieksa, with only five localities. From neighbouring provinces there are observations only from Ok. I have observed it in 15 municipalities, Kesälähti, Kitee, Värtšilä, Tohmajärvi, Rääkkylä, Pyhäselkä, Tuupovaara, Ilomantsi, Joensuu, Liperi, Polvijärvi, Kaavi, Juuka and Lieksa (Kb) and Saari (KL/Fin). Today it is common but seldom frequent.

**Taraxacum leptodon** Markl.
Collected by Sonck in Jäppilä (Sb) in 1948. I have found it once in Joensuu.

Specimens examined. Kb: Joensuu, Käpykangas, Voimatie 6, roadside lawn (69490:36428) 2010 [JR].

**Taraxacum leptophyllum** H.Lindb. ex Såltin
Sonck collected this species in three localities in Lieksa. It has been collected by Pettersson in Simpele (KL/Fin) in 1933, by Lindberg in Imatra (Sa) in 1911 and in Sortavala (KL/Rus) in 1938, by Pettersson in Ruokolahti (Sa) in 1933 and by A. Ulvinen in Valkeala (Sa) in 1949. Nowadays it is very frequent in the southern range of the study area, with five localities in KL/Fin. Locally frequent, e.g. in Saari, Akonpohja. Besides, I have collected it twice in southernmost municipalities in Kb, in Kesälähti and Eno, and once in neighbouring province, in Ristiina (Sa) in 2009. Sparse.

**Taraxacum leucopodum** Hagl.
There is only one previous Finnish specimen of this species in H, collected in Ta, Tampere (Kääntönen 1977). I have found it twice in Joensuu, Linnunlahti.


**Taraxacum lingulatum** Markl.
This species has been collected by Marklund and Sonck in Joensuu in 1944, by Sonck in Lieksa in 1947, and by Kyyhkyinen in Maaninka (Sb) in 1946. Nowadays it belongs to the dominant dandelions in the study area, even though I have not seen it all municipalities. Especially in Joensuu it is locally frequent.

**Taraxacum longicuspis** Markl.
This species has been described based on at specimens collected in Ab, Naantali (Marklund 1926). I collected specimens from Kb, which Øllgaard identified as *T. longicuspis* in 2001. Among unidentified specimens at H, I found later specimens collected by Marklund in Joensuu in 1944, and by Väinö Hosiaisluoma in Kontiolahti, Varparanta (Kb) in 1970, which proved to be *T. longicuspis*. In summer 2011 Øllgaard and I studied specimens from Kb and Ab, Naantali, and we became convinced of our identifications. Collected also by Lundevall, in Parikkala (KI/Fin) in 1991 (S, det. Øllgaard 2009).

Collected in six municipalities in Kb. In Kitee, Tohmajärvi and Värtšilä it may be considered as common. Additionally, I have found it once in Joutseno (Sa) in 2007, in Iitti (Ta) in 1988, and even in Pello (Obu) in the north, in 2008.

Specimens examined. Kb: Eno, church village, Enontie, roadside, by the church (69689:36613) 2000 [JR]; Joensuu, Sirkkala, Kettuvaaantie, roadside (S), beside the chipboard mill of Schauman and the dairy (69472:36427–9) 1998 [JR]; Joensuu, Käpykangas, Kuurnankatu, roadside lawn, near Hiiskoskentie (69490:36419) 2002 [JR];
Taraxacum longisquameum H.Lindb.

This species was found to be sparse by Sonck in Lieksa, with eight localities. It was collected by Marklund in Pyhäselkä (Kb) in 1944. Nowadays it is one of the common dandelions, observed by me in 18 municipalities. It is one of the dominant ones e.g. in Polvijärvi, Haavikonmäki and Outokumpu, Kuusjärvi (Kb).

Taraxacum lucescens Dahlst.

This species was found to be fairly frequent by Sonck in Lieksa, with 28 localities. It was collected by Marklund in Pyhäselkä (Kb) in 1944 and by Suttarinen in Nurmes (Kb) in 1936, and in by Pettersson in Simpele (KI/Fin) in 1933. I have found this species in 20 municipalities. Its frequency have remained unchanged, but the species is not dominant anywhere. It seems to avoid modern habitats like park lawns.

Taraxacum macranthoides Hagl.

Collected by Marklund in two localities in Joensuu in 1944. Concerning Kb, it is today most common in Joensuu. I have found it in more than ten localities. Elsewhere in Kb I have observed it in six municipalities. Sparse to fairly sparse.

**Taraxacum multilibum** Dahlst. ex Puolanne  
In the 1940s this species was found to be rare in Lieksa, with 13 localities. Elsewhere in Kb it has previously been collected by Marklund in Joensuu in 1944 and by Sonck in Säyneinen and Rautavaara in 1947. I have found it in many sites in Joensuu and in eight other municipalities in Kb. Local, but in some places it is rather frequent.


**Taraxacum mundulum** Railons. (syn. *T. spissum* H. Öllg. & J. Räsänen, syn. nov.)  
There are no previous collections from eastern Finland, the nearest being from Kuusankoski (Ta). That specimen collected by Klingstedt in 1950s was first identified as *T. praeradians*. I have found this species in Pyhäselkä, Joensuu and Tohmajärvi (Kb), and in Luumäki (Sa). We described this taxon as a new species, *T. spissum* (Ollgaard & Räsänen 2008), but later we realised that Railonsala (1962) had described it earlier.


**Taraxacum obliquilobum** Dahlst. (syn. *T. unguiculatum* H. Lindb. & Palmg.)  
This species was found to be frequent by Sonck in Lieksa, with more than 80 localities. It favours "old fashioned" habitats. Collected by Pettersson in Simpele in 1932 and by Lundevall in Parikkala (both Kl/Fin) in 1991. The species is common and frequent in many localities.

**Taraxacum obnubilum** Dahlst. ex Puolanne  
I have found this species in eight sites in four municipalities in Kb, and in neighbouring provinces in Vehmersalmi (Sb) in 2007, in Ristiina in 2009 and in Mikkeli in 2010 (Sb). Sparse to scattered. Its local distribution in Kb include Joensuu and the neighbouring municipalities.


**Taraxacum obtusifrons** Markl.  
The species was known for a long only from N. I have found it once in Joensuu, in an industrial area. These plants were young and their identification became possible first after cultivation. Probably a recent alien.


**Taraxacum obtusulum** H. Lindb.  
This species was found to be sparse by Sonck in Lieksa, with only three localities. Collected by him also in Liperi (Kb) in 1974 (H). There are several collections from neighbouring provinces.
Taraxacum oissilivosum J. Räsän. This species is described in this volume (Räsän. 2013). Sparse in Outokumpu (Kb) and Luumäki (Sa) in 2001 and in Savitaipale (Sa) in 2013.

Specimens examined. Kb: Outokumpu, Kuusjärvi, roadside of road 17, beside the church (69566:35985) 2005 [JR PO].

Taraxacum oxycentrum Markl.

There are no previous observations of this species in the study area. Closest locality was in Elimäki in 2000 (N), where I found it for the first time. There after I have collected it in Joensuu and Tuupovaara (Kb) in 2005, Vehmersalmi (Sb) in 2007 and Suomussalmi (Ok) in 2001.

Specimens examined. Kb: Joensuu, Noljakka, Aavarranta, N-side of Nuottaniemiest, former building site, beside of the crossroad of the beach (69484:36385) 1989 [JR]; Tuupovaara, Saarivaara, garden lawn (69128:36971) 2005 [JR PO].

Taraxacum pallescens Dahlst.

There are no previous observations of this species in the study area. It was collected by A. Ulvinen from the neighbouring province Sa, in Kouvola in 1940. I have found it in Joensuu, Linnunlahti and Käpykangas, and also in Rääkkylä, Juhmakka (Kb). Scattered.


Fig. 13. Taraxacum obnubilumis is widely distributed in Finland but still scattered and rare.
this is the most common and frequent dandelion in the study area, occurring in all municipalities in Kb.

**Taraxacum petterssonii** Markl.

I have found this species in Joensuu and two neighbouring municipalities in Kb. Sparse to fairly sparse. Most probably a recent alien.


**Taraxacum piceatifrons** Sahlin

Described by Sahlin (1976) on based on at specimens collected by Sonck in Lieksa, Salonkylä, Ala-Laukanvaara in 1946. He recollected it there in 1975 and from the neighbouring Ala-Mustavaara in 1981. I have collected it with Øllgaard in the type locality. Sonck found it in the center of Joensuu in 1979, and I recollected later. This species is perhaps more common than observed, as some individuals are difficult to separate from *T. agroglossum* even when cultivated side by side. However, when well developed these are quite easy to distinguish.


**Taraxacum planum** Raunk. emend. H. Øllg. (syn. *T. chloroleucum* Dahlst.)

This species was found by Marklund in Lieksa in 1944, and by Sonck in Kaavi in 1947. It is rare also in neighbouring provinces, recorded by Kyyhkynen in Maaninka (Sb), and by Heikkinen in Kajaani (Ok). It was known earlier by its younger name *T. chloroleucum*, which Øllgaard (1972) synonymized with *T. planum*. In Sältin (1965) *T. chloroleucum* is a synonym of *T. trilobatum*. Consequently many specimens of *T. planum* may be placed in collections as *T. trilobatum*. Nowadays this species seems to become more common than in Sonck’s time. I have found it in 19 municipalities in Kb, but not in NW region. Observations are lacking also from some southern municipalities. In Joensuu it is common and locally fairly frequent.

**Taraxacum polyodon** Dahlst.

This species was found to be very rare by Sonck in Lieksa, with only one locality, Collected by Buch in Lappeenranta (Sa) in 1908, by Heikkinen in Kajaani (Ok) in 1957, and by Saarsoo in Hyrynsalmi (Ok) in 1961. I have found two localities in Joensuu and three in Kontiolahti. Sparse, except in Kontioniemi, where it is frequent and repeatedly collected during years.


**Taraxacum porcellisinus** Sonck & H. Øllg.

The species is rare in Finland. It was described based on at specimens collected in Li (Sonck & Øllgaard 1999). I have found it in two localities in Kuusamo (Ks) in 2009, and once in Joensuu.

Specimens examined. Kb: Joensuu, Käpykangas, Kaltimontie 1, roadside (69491:36423) 2009 [JR].
**Taraxacum porrigens** Markl. ex Puolanne Lundevall collected this species in Simpele (KL/Fin) in 1991. No other observations.

**Taraxacum praeradians** Dahlst. (syn. *T. macranthum* Dahlst.)

This species was found to be frequent by Sonck in Lieksa, with two adjacent localities, he found it also in Joensuu in 1944. I have found it in four municipalities in Kb, and to be frequent in Heinävesi (Sb) in 2007. In the study area it has always been sparse.


**Taraxacum praestabile** Railons.

This is the other species which have escaped from my garden. The other one was *T. maculatum*. Raised of seeds collected in Tornio, Kaakamo (PeP), the type locality of this species. A favourite dandelion of brown hares in my garden.

Specimens examined. Kb: Joensuu, Linnunlahti, Pajutie 1 B 4, garden lawn, W-side of the house (69472:36401) 2005 [JR].

**Taraxacum privum** Dahlst.

Rare in eastern Finland, collected twice by Sonck in Lieksa (Kb). It has been observed in neighbouring provinces in Valkela (Sa) by Klingstedt in 1955, in Kuopio (Sb) by Sonck in 1943, and in Kajaani (Ok) by Arvonen in 1912, by Railonsala in 1955 and by Heikkinen in 1956. Not found by me.

**Taraxacum procerisquameum** H. Øllg.

This species was first collected in Finland in Ab in the 1960s, first determined as *T. procerum*. I have collected it in Joensuu in 1989, and since that in nine districts in the city, and elsewhere in Kb in nine municipalities. Usually scattered. Joensuu is the center of its distribution in Finland, and in the Noljakka district it is frequent. Elsewhere in Finland I have collected it only in Anjalankoski (Ka) and in Jaala (Ta) both in 2007.


**Taraxacum procerum** Hagl.
Collected by Marklund in Joensuu (Kb) in 1944, by Heikkinen and Sältin in Hyrynsalmi (Ok) in 1965. I have found it once in Kb.


**Taraxacum pulcherrimum** H.Lindb.
Collected earlier in eastern Finland only in Ok, with several localities in Kajaani, the oldest one collected by Arvonen in 1912. Heikkinen collected it in Paltamo (Ok) in 1956. I have collected it in two municipalities in Kb. Sparse.

Specimens examined. Kb: Joensuu, center, Papinkatu 8, by the street under the hedge (69464:36416) 2002 [JR]); Tohmajärvi, Kemie, lawn, SW-side of the road to Niirala, near the service station (69066:6735) 1999 [HØ JR ER].

**Taraxacum pulverulentum** H.Øllg.
I reported this species as new to Finland on the basis of specimens collected in Oulu, Obo in 2002 (Räsänen 2005). However, a specimen collected by Heikkinen in Kajaani (Ok) in 1964 was identified by Øllgaard as *T. pulverulentum* (S) already in 1992. I found it in Värtsilä (Kb) in 2005.

**Taraxacum puolannei** Markl. ex Puolanne (syn. *T. aculeatum* Hagl.)

This species was found to be rare by Sonck in Lieksa, with only three localities. Collected by Pettersson in Simpele in 1933, and by Lundevall in Parikkala (KI/Fin) in 1991. It is also known from Sb and Ok. I have found it in nearly all municipalities in Kb. In some sites it is the dominant dandelion.

**Taraxacum pycnolobum** Dahlst.

Collected in the study area only by Sonck, in Lieksa in 1945 and in Joensuu in 1944. Collected previously from Lappeenranta and Lauritsala (Sa), Kuopio (Sb), Kajaani and Paltamo (Ok).

**Taraxacum railonsalae** Hagl. & Saarsoo

This dandelion is distributed mainly in western Finland (Ab, St, Oa and Obu). Sparse in Joensuu in 2002 on a garden lawn established a few years before. In 2009 I found it also in Posio (Ks) in 2009.

Specimens examined. Kb: Joensuu, Linnunlahti, Paju-tie 1 C 14, lawn, by the hedge (69472:36401) 2002 [JR].

**Taraxacum recurvum** Dahlst.

This species was found to be rare and sparse by Sonck in Lieksa, with only four localities. Collected by Marklund and Sonck in Joensuu in the 1944. There are many old collections from Kajaani (Ok), and collected by Heikkinen in Hyrynsalmi (Ok) in 1971 and by me in 1999.

**Taraxacum retroflexum** H.Lindb.

This species was found to be common by Sonck in Lieksa, with more than 50 localities. Collected also in Nurmes (Kb) by Suutarinen in 1937 and in Joensuu by Marklund in 1944, and by Sonck in Parikkala (KI/Fin) in 1974. Common in the study area.

**Taraxacum sahlinii** Railons.

Described by Railonsala (1967) based on at specimens collected in Tornio (Obu). It seems that it is currently spreading in the study area. Recently found in Lieksa, Kylänlahti (scattered), in the area which was examined by Sonck. As this species is easy to recognise, it is not obvious, that it would have remained unnoticed by him. On the other hand, this species is almost absent in many recently examined localities. I have found it in 11 municipalities in Kb and also in Simpele (KI/Fin). In Kaavi it was frequent, elsewhere scattered to sparse.


**Taraxacum sellandii** Dahlst.

This species is rare in eastern Finland. Collected by Pettersson in Simpele (KI/Fin) in 1933 and by Heikkinen in Kajaani (Ok) in 1956. Scattered in Joensuu (Kb).

Specimens examined. Kb: Joensuu, Linnunlahti, Paju-tie 1, roadside and garden lawn (69472:36401-2) 1988 [JR].

**Taraxacum serratifrons** Florstr.

This species grows mainly in SW Finland, with scattered occurrences to Oa to Ka. In eastern Finland it was collected by Heikkinen in Hyrynsalmi (Ok) in 1960. I have found it once in Joensuu.

Specimens examined. Kb: Joensuu, Linnunlahti, Paju-tie 1, roadside and garden lawn (69472:36401) 2002 [JR].

**Taraxacum serratatum** Kirschner, H. Øllg. & Štepánek

This species was found as new to Finland in Kontiolahti (Kb) in 1999, two years after its descrip-


**Taraxacum severum** M.P. Chr.
Collected by Øllgaard in the center of Lieksa as new to Finland (Räsänen 2007). Sparse. Frequent in Pori, Reposaari (St) in 2005.


**Taraxacum sinus-avis** J. Räsänen
This species is described in this volume (Räsänen 2013). Common in Joensuu, Linnunlahti. Elsewhere in Kb it has been found to be sparse in Säyneinen and Outokumpu. I have collected it also in Lohja (Ab) and Espoo (N) in 2007.


**Taraxacum sonckii** Hagl. ex Sahlin
This species was found to be very frequent by Sonck in Lieksa, Kylänlahti in 1946. Haglund identified it as a new species but did not describe it. Sahlin (1976) provided a formal description. Collected by Lundevall in Simpele (Kl/Fin) in 1991. Together with Øllgaard and Sonck observed this species in Suonenjoki and Kuopio (Sb) in 1943 and Lundevall in Lappeenranta (Sa) in 1991. Collected by me in the center of Joensuu in 1997, and in neighbouring province Ok in Kajaani in 2000.

Specimens examined. Kb: Joensuu, center, Kalastajankatu 8, S-side of the house (69465:36418) 1999 [JR]; Liperi, Vinnijärvi, orthodox church, by the road near the stone wall (69512:36141) 2005 [JR PO]; Rääkkylä, church village, Meteli, grass, near the power station PKS (69141:36365) 1999 [HØ JR ER].

**Taraxacum stereodes** Ekm. ex Hagl.
Sonck observed this species in Suonenjoki and Kuopio (Sb) in 1943 and Lundevall in Parikkala (KI/Fin) in 1991. Collected by me in the center of Joensuu in 1997, and in neighbouring province Ok in Kajaani in 2000.

Specimens examined. Kb: Joensuu, center, Kalastajankatu 8, lawn at S-side of the house (69465:36417) 1997 [JR].

**Taraxacum subalatum** H.Lindb.
Sonck (1964a) mentioned that he found two populations of *T. subalatum* in Lieksa, but these specimens represent *T. coartatum*. Elsewhere in eastern Finland known only from Ok. Not found by me.

**Taraxacum subcanescens** Markl. ex Puolanne
This species is previously known from neighbouring provinces, collected by Kyyhkynen in Nilsiä in 1915 and in Pielavesi in 1933 (Sb), by Sonck in Suonenjoki (Sb) in 1947 and by Heikkinen and Sältin in Hyrynsalmi (Ok) in 1965. I have found it in nine municipalities in Kb, and in Simpele (KI/Fin). Sparse to scattered.

**Taraxacum subdahlstedtii** M.P. Chr.
First found in Kb in Joensuu and Kontiolahti in 1990s (Räsänen 2009). A recent alien, which have become more abundant during the past 15 years.


**Taraxacum subglaucescens** Markl.
Collected by V. Hosiaisluoma in Kontiolahti, Var-paranta (Kb) in 1970, and in neighbouring province Sb by Kyyhkynen in Maaninka in 1946. Rare in Kb.


**Taraxacum subhuelphersianum** M.P. Chr.
This species was described by Christiansen (1971) based on at specimens collected in Denmark in 1953. It was found to be frequent by Sonck in Lieksa in 1944, with only four localities. He named it tentatively as *T. laetiflorum* var. It was collected by Marklund in Joensuu, also in 1944. In the neighbouring province Ok it was first collected by Heikkinen in Hyrnysalma in 1960. I have found *T. subhuelphersianum* quite regularly in Kb, in 12 municipalities, and once in Saari (Kl/Fin). Most likely it is more common than observed, because the majority of observations

Fig. 16. *Taraxacum subhuelphersianum* is one of the few species of section *Taraxacum* not producing pollen.
were made in 1999, when Øllgaard was in the field with me and confirmed the identifications. Sparse to fairly sparse. The species is probably fairly common all over Finland, as I have collected it also in seven other provinces (Ab, N, Oa, Sb, Om, Ok and Obu).


**Taraxacum sublaeticolor** Dahlst.

According to Sonck this species was fairly rare in Lieksa, with 19 localities. Elsewhere in Kb it have been collected by Marklund in Joensuu in 1944, and by Sonck in Kaavi, Säyneinen and Rautavaara in 1947. Collected early also by Marklund and Arvonen in Sortavala (KL/Rus) in 1910. Today scattered in Kb, known from nine municipalities. Also in Saari, Akonpohja (KL/Fin). In Joensuu it is common and sometimes quite frequent.


**Taraxacum submaculosum** Markl.

Amongst section *Taraxacum* this is an exceptional species, as it has remarkably declined. It was found to be common and frequent by Sonck in Lieksa, with almost 160 localities. In the study area it has been observed earlier also in Nurmes, Joensuu, Kaavi and Säyneinen (Kb), and in Parikkala and Simpele (KL/Fin). I have found it in sev-
en localities in Kb. Only a few individuals in all localities.


**Taraxacum subrubescens** Dahlst. ex Hagl.

There is a specimen named *T. subrubescens* in S, collected by Sonck in Lieksa in 1945, determined by Haglund as *T. isthmicola*. Collected by Kyyhkyinen from the neighbouring province Sb in Pielavesi in 1939 and identified as *T. subrubescens*, but Øllgaard disagreed with this identification in 2006. Consequently, there is no confirmed observations from eastern Finland.

**Taraxacum subserratifrons** Saarsoo

Saarsoo (1962) described the species in 1962 based on specimens collected by Heikkinnen in Hyrynsalmi, Kangasjärvi (Ok). This was for a long time the only observation from eastern Finland. I have collected it in three localities in Joensuu and in one in Valtimo. In the latter there were many individuals.


**Taraxacum subtile** Markl.

Marklund (1911) described this species based on specimens collected by himself in Sortavalu (Kl/Rus) in 1911. Lindberg recollected it in the same place in 1938. I have found it once in Joensuu.

Specimens examined. Kb: Joensuu, city center, Papinkatu 10, lawn, S-side of the house, fairly sparse (69464:36415) 1997 [JR].

**Taraxacum subulatum** Markl.

New to eastern Finland. I have found this species once in Ilomantsi (Kb). Sparse. Older collections from Finland have been done only in N and Li.


**Taraxacum tanyphyllum** Dahlst.

This species was collected by Sonck and Marklund in Joensuu in 1944. In neighbouring provinces it has been found only in Sb (Sältin 1965). Nowadays it is common in Joensuu, and it grows around Joensuu within a radius of 50 km. As a strong and competitive species, it thrives well in vigorous grasslands and it is occasionally frequent. I have observed it to be the dominant dandelion on a fallow field in Tohmajärvi, Onkamo, Kirtsinniemi.

Specimens examined. Kb: Eno, church village, Enontie, roadside near the church (69689:36613) 2000 [JR];

**Taraxacum tenuiforme** Hagl.

I have found this species in four localities in Joensuu (Räsänen 2009). Along Papinkatu it has been regularly observed to be frequent, but sparse in other localities.


**Taraxacum theodori** Lundev. & H. Öllg.

This species was tentatively named by Haglund, but only recently described by Lundevall & Øllgaard (2006). In Sweden and Denmark it is widespread. New to eastern Finland.

Specimens examined. Kb: Joensuu, Linnunlahti, Pajutie, roadside lawn, 1 individual (69472:36401) 1999 [HØ JR ER].

**Taraxacum trilobatum** Palmgr.

Sonck (1964a) mentioned that he found two populations of *T. subulicuspis* Hagl. in ed. in Lieksa, Määräjäntie (Kb) in 1944. Later Sonck described it in Haglund (1983) as a new to species, and he assigned it to section *Crocea*. Lieksa is not mentioned. There was also a note, that *T. subulicuspis* resembles *T. trilobatum*. *T. subulicuspis* was described as a mountain species from Sweden, and most likely it does not grow in Lieksa. Lieksa specimens may represent a species that was previously called *T. trilobatum*. Unfortunately, specimens have not been found to verify this assumption. At that time *T. planum* Raunk. (syn. *T. chloroleucum*) and *T. trilobatum* were treated as a same species (see. *T. planum*) (Øllgaard 1972), and consequently, *T. planum* were commonly misidentified as *T. trilobatum*. All the relevant specimens from the study area have proved to be *T. planum*.

**Taraxacum tumentilobum** Markl. ex Puolanne

This species was found to be sparse to fairly sparse by Sonck in Lieksa, with only four localities, and Marklund collected it in Joensuu in 1944. It is currently known from all three neighbouring municipalities and from Kl/Rus in Kurkijoki. Nowadays it is scattered but occasionally frequent. I have collected it in 16 municipalities: Kesälähti,
Värtsilä, Rääkkylä, Pyhäselkä, Joensuu, Liperi, Outokumpu, Kontiolahti, Tuupovaara, Ilomantsi, Lieksa and Juuka in Kb, and in all municipalities in Kl/Fin. It seems to be absent in the NW and N Kb. The species flowers amongst the first ones of dandelions.

**Taraxacum undulatum** H.Lindb. & Markl.
There are many specimens at H, collected before 1945 in Sortavala (KI/Rus). For a short period it was almost only dandelion along Malmikatu in the city center of Joensuu. It was probably introduced amongst ornamental plants. It disappeared due to the lawn management. I have collected in neighbouring province Sb, in Leppävirta in 2007.

Specimens examined. Kb: Joensuu, center, Malmikatu 8, near the parking place of Citymarket, under roses (69466:36418) 1988 [JR].

**Taraxacum volitans** J. Räsänen
This species is described in this volume (Räsänen 2013). I have found it only in three localities in Joensuu. Sparse. The locality on Hallitie was destroyed because of building the area. The other two localities are within one kilometer to each others.

Specimens examined. Kb: Joensuu, center, Rantakatu 30, side of S-wall, on lawn (69473:36423) 2001 [JR]; Joensuu, center, Torikatu 11, lawn, E-side of the house (69466:36418) 2008 [JR]; Joensuu, Louhela, Hallitie, roadside, near the parking place of ice arena (69467:36409) 2001 [JR].

**Taraxacum xanthostigma** H. Lindb.
This species was found to be rare by Sonck, with only four localities in Lieksa. Collected by Marklund in Joensuu in 1944, by Sonck in Kuopio (Sb) in 1947, and by Heikkinen in Kajaani and Vuolijoki (Ok) in 1957. Nowadays it is common in the study area, observed by me in 20 municipalities in Kb but only in one in Kl/Fin, Uukuniemi, Niukkala.

**Section Ceratoidea**

**Taraxacum xanthostigma** H. Lindb.
This species was described by Øllgaard (1978) based on at material collected in Denmark, Jylland. In Finland collected previously only in Ta. I have found it in three localities in Kb. This species may have arrived amongst ornamental plants. During the past few years it has become more frequent in Kontiolahti. In other localities it is sparse.

Specimens examined. Kb: Joensuu, Linnunlahti, Pajutie, roadside lawn (69472:36401) 1999 [HØ JR ER]; Kontiolahti, Kontioniemi, flower bed (neglected for years), S-side of the former hospital (69632:36434) 1997 [JR]; Lieksa, center, Asemakatu, SW-end of center lawn of the street (70276:36514) 1999 [HØ JR].
Table 3. *Taraxacum* species found in Karelia borealis (Kb) and Karelia ladogensis (Kl). Last column lists species found by Sonck in Lieksa 1944–1948.

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<th>Kl old data</th>
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<tr>
<td>T. xanthostigma</td>
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<td>x</td>
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</tbody>
</table>

**Sect. Ceratoidea**

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<th>old data</th>
<th>&gt;1985</th>
<th>Kl</th>
<th>old data</th>
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<th>Lieksa</th>
<th>Sonck</th>
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**Total**

<table>
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<th>Kl</th>
<th>old data</th>
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<td>51</td>
<td>42</td>
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Summary

Comparison of the dandelion flora of Karelia borealis published by Sonck (1949, 1964a) with records made since the 1980s provides fairly accurate data for evaluating changes in the flora. Sonck began to collect material in the 1930s, although it must be kept in mind that his observations were restricted to Lieksa, while my data cover the whole area. In the 1930s the general landscape did not differ much between the North Karelian municipalities, which enabled broader interpretations.

The changes in species composition during the past 50 years have been remarkable. The general trend is that species in the sections Borea and Erythrosperma have greatly declined, while species in section Taraxacum have become more frequent. The main reasons are changes in land use. Traditional farming has mostly ceased, and modern management covers a much smaller area compared to the situation that prevailed 50 years ago. Meadows are rare nowadays, whereas the area of managed lawns is extensive. New species are introduced by the sowing of foreign seeds for lawns and by traffic.

Species associated with traditional farming methods (sections Borea and Erythrosperma) have not been able to compete with recent aliens (section Taraxacum) in modern habitats. Asexual, apomictic breeding prevents adaptation to changing environments. Most dandelions seem to have a fairly narrow ecological niche. When that niche is lost, decline begins, and newly introduced species adapted to modern habitats outcompete previously established species. Humans facilitate this process. Naturally, the rate of change varies between species; some species of the generally declining section Borea remain vigorous, while others in section Taraxacum are declining.

The former hospital at Kontioniemi became an excellent test field when it closed in the 1990s, having been operational since the end of the 1920s. The territory has now been unmanaged for about ten years. Many species of section Borea still grow there, although invasive species from section Taraxacum are also gradually becoming more abundant in this refugium.

One reason for the competitiveness of certain species may be minor differences in times of flowering. When collecting a specimen, I always take the most developed inflorescence, which I keep in a glass of water to obtain ripe seeds. Sometimes seed-eating insects accompany these inflorescences, although I try to select healthy looking heads. The number of insects increases towards the end of the growing season, and this may affect the proportion of seeds that are able to survive. Early flowering species may produce better seeds.

Species of section Borea flower somewhat later than those of section Taraxacum, which may decrease seed production due to the greater impact of seed-eating insects. Furthermore, achenes are smaller in section Borea and have lower rates of germination, while their initial growth rates are also lower than in section Taraxacum. This may be a competitive advantage for the latter section, but this observation needs to be experimentally tested.

Species of the section Erythrosperma favour drier habitats than other dandelions, which may be another reason for their decline. Many such habitats have become overgrown during the last few decades. Dandelions do not have a seed bank, so they require continuous seed set to survive. Nowadays their favourite open dry habitats are too fragmented to ensure successful spreading between suitable habitats.

The vicinity of the former hospital at Kontioniemi clearly has the greatest diversity of dandelions. Its old lawn hosts many species that have disappeared from other areas, such as those of section Borea: T. laceratum, T. apicatum, T. boreum, T. scalare, T. karelicum, T. canaliculatum, T. gutulatum and T. humile, and also T. penicilliforme and T. ostenfeldii, which may still be encountered elsewhere. The diversity of section Erythrosperma is also greatest here, as represented by T. proximum, T. fulvum and T. isthmicola.

The section Taraxacum is also very diverse at Kontioniemi. Taraxacum submaculosum and T. canentifolium represent older elements, and the number of aliens has increased in recent decades. The most recent introductions, T. vanum, T. subdahlstedtii, T. inarmatum and T. sertatum, have clearly arrived amongst ornamental perennials. Altogether, 51 species of dandelions have been found at Kontioniemi.
The vicinity of my home at Linnunlahti, Joen-suu, is also rich in dandelions. Recent aliens from section Taraxacum dominate. In 1999 I counted 52 species, making a total of 74 since 1986. During this period many changes have occurred, including continuous renovation of lawns and streets, and cultivation of newamentals. As a result, the dandelion flora is less diverse today than it was in the 1990s. Two new species have been described from this area (Räsänen 2013): T. coartatiforme and T. sinus-avis. Concerning Joensuu and eastern Karelia as a whole, the following species have been found in my home region only: T. homoschistum, T. sellandii, T. crispatum, T. di- laceratum, T. leucopodum, T. insuetum, T. flavo- styllum, T. kufpferii, T. fusciflorum (section Hamata), and T. pastiniferum (section Borea). Taraxa- cum acutangulum, T. laticordatum, T. hepaticum, and T. lojoënse (section Borea) all have a single additional locality outside this area. The third most species rich area is Mõhkö in Ilomantsi parish, with 44 species of Taraxacum.

Until now 182 species of Taraxacum have been found in Kb and 75 in Kl/Fin, with 188 species in total. These belong to the following sections: Erythrosperma (6), Boreigena (2), Hamata (3), Borea (26), Macrodonta (1), Taraxacum (149), and Ceratoidea (1). In addition there are some unnamed specimens, mostly belonging to section Taraxacum, but some also to section Borea. Under the present conditions, the species of section Borea may be lost before they are discovered, because the rate of decline is so rapid.

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References


