

Epilobium hirsutum in the Åland Islands, SW Finland

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Epilobium hirsutum L. is an introduced species in Finland with the first reliable findings made in the late 19th century. The number of new findings accumulated slowly during the period 1900–1929. From the 1930's onwards, the number of findings grew rapidly and *E. hirsutum* has been found in 153 grid squares of 10 km × 10 km size in the southern part of Finland until 2012. The first information of the species in the Åland Islands is a note in the literature from 1821 and the first collected specimen in the Åland Islands is from the municipality of Sund in 1873. However, both these are doubtful as they were not noticed in Finnish vascular plant floras later on. The first reliable finding is from 1973 and thereafter the localities with *E. hirsutum* increased with four more during the 1970's, eight new during the 1980's, fourteen new during the 1990's and 35 new localities during the period 2000–2013. It thrives chiefly in man-made habitats in the cultural landscape and the most common habitats in the Åland Islands seem to be roadsides and road ditches. Although *E. hirsutum* has expanded during the last fifty years in Åland, it is not common yet and it has not been found in most of the eastern archipelago area. As an immigrant in our flora, *E. hirsutum* is now well established in the Åland Islands and it will probably be more common in the future. However, it seems that it is not a harmful invasive weed in Åland.

Introduction

Epilobium hirsutum L. is a species occurring in Eurasia east to Mongolia and northern China, and in North Africa (Hultén & Fries 1986). It has been introduced into many parts of the world, e.g. North America, the Cape Verde Islands, the Arabian Peninsula, Central and South Africa and southern Australia (Hultén & Fries 1986, IPANE 2013). It is regarded as an invasive species in the USA and Australia.

E. hirsutum is common in Denmark including the island of Bornholm (Hansen 1981, Jon-

sell & Karlsson 2010). It is a rare recent immigrant in southern Norway (Lid & Lid 2005, Jonsell & Karlsson 2010). *E. hirsutum* is common in southern Sweden, especially in Scania and Gotland (Weimarck & Weimarck 1985, Jonsell & Karlsson 2010). It is possibly indigenous in parts of Scania and in the Gothenburg area, and otherwise it is a fairly common immigrant in coastal and lowland areas of the southern half of the country. The northern limit of the species in Sweden is at about 65°20' N lat. in the province of Norrbotten at Piteå where it was found as introduced with timber from the Baltic states in 2007

(Jonsell & Karlsson 2010). It is quite common along the coast of the province of Uppland and it has also been found in the Roslagen archipelago, even in two treeless skerries (Jonsell 2010). The northernmost locality of *E. hirsutum* in Finland is at about 64°40' N lat. in Om Raahe (Hultén 1971, Jonsell & Karlsson 2010, Lampinen & Lahti 2013). Its distribution is southerly in Finland with the majority of the findings in the provinces of Al, Ab, N and Ta (Lampinen & Lahti 2013).

Epilobium hirsutum does not belong to the indigenous flora of Finland (Kytövuori 1980, Jonsell & Karlsson 2010). It has occasionally been cultivated earlier and some of the introductions may be garden escapes (Kalela & Väänänen 1960, Rydberg & Wanntorp 2001, IPANE 2013). Early unreliable information of the species in Finland is discussed by Hjelt (1909–11). The oldest collection record, according to Kastikka (2013), is from 1878 the municipality of Sund in the Åland Islands (see below). One further finding, the first reliable in Finland, was made during the 19th century, namely in the harbour of Ab Turku by N. Aschan in 1886 [(TUR; for herbarium acronyms, see Index Herbariorum (2013)]. The number of new findings accumulated slowly during the period 1900–1929. From the 1930's onwards, the number of findings grew rapidly (Kytövuori 1980) and *E. hirsutum* has been found in 153 grid squares of 10 km × 10 km size until 2012 (Lampinen & Lahti 2013).

***Epilobium hirsutum* expanding in the Åland Islands**

The first information of *Epilobium hirsutum* growing in the Åland Islands is that it is rare in field ditches (Prytz & Eneberg 1821). As Prytz & Eneberg (1821) also mentions *E. parviflorum* Schreb. (as *E. pubescens* Roth), a species which occasionally is wrongly identified as *E. hirsutum*, the information about *E. hirsutum* in Åland may be correct. However, botanists have not accepted this finding as it is not included in vascular plant floras of Finland.

As mentioned above, the first collection of *E. hirsutum* in the Åland Islands is a voucher specimen, which, according to the label, was collected by A. Arrhenius in the municipality of Sund

in the eastern part of the mainland area of Åland on June 20, 1878 (JYV; Table 1). The label is not in Arrhenius's handwriting. No other information is given on the label. Arrhenius spent the whole summer of 1878 in Åland, collecting many plants, both by himself and together with A. O. Kihlman. Voucher specimens collected by Arrhenius are preserved among others in H, JYV, OULU and TUR. According to Kastikka (2013), there are only two vouchers collected by Arrhenius on June 20, 1878. One is the specimen of *E. hirsutum* and the other is *Carex pulicaris* L. collected in the village of Vargsunda in municipality of Jomala (H). Arrhenius and Kihlman collected several plants in Jomala on June 18, 1878 and in the municipalities of Finström and Lemland on June 21, 1878. As no information on *E. hirsutum* occurring in the Åland Islands is included in older floras, e.g. Alenius (1895, 1907), Hiitonen (1933), Kalela & Väänänen (1960) and Kytövuori (1980), the specimen collected by Arrhenius in Sund remains as a mystery. It was neither mentioned in a paper on new vascular plants in the Åland Islands (Hægström 2003), nor in the Flora of the Åland Islands (Hægström & Hægström 2010) or in Flora Nordica (Jonsell & Karlsson 2010). We cannot understand how a vascular plant species, perhaps new to the flora of Finland, could pass unnoticed until now. One explanation could be that the plant in JYV was not collected by Arrhenius in Sund in 1878, but a label for another plant was attached by mistake to the sheet with a specimen of *E. hirsutum* collected elsewhere. Another explanation is that the voucher specimen in JYV was unknown to botanists until it was included in the database Kastikka (2013).

The second collection of *E. hirsutum* was made at a lakeshore in the municipality of Jomala (perhaps lake Dalkarbyträsk) by A. Aro in 1973 (H; Table 1). It was observed a few years later by the librarian Anja-Rita Fallström in a road ditch at her house in the village of Möckelby and it was collected there by H. Törnroth in 1978 (H). The authors CAH and EH saw it in the same place in 1978. It was also collected there by the author CAH as nr. 2694 in 1980 (H).

Three new localities were discovered in the municipality of Eckerö in westernmost Åland in 1979. One of them was on bladder and sea-

weed wrack on a seashore. The two other were on marshy ground on a lakeshore and a seashore.

The number of new localities for *E. hirsutum* grew with eight during the 1980's. One was in the municipality of Saltvik in 1981, another in the municipality of Vårdö in 1985. Both stands grew on roadsides. A third locality was found in a gully in Finström in 1988. Further, Sonja Grönholm, who studied the vascular plant flora of the town of Mariehamn in 1988, found *E. hirsutum* in four localities in the northern part of the town and one in the municipality of Jomala just north of the border of the town (Grönholm 1991).

The number of stands of *E. hirsutum* grew with fourteen new localities during the 1990's. The species is still spreading as it was observed in 35 new localities during the period 2000–2013.

Discussion

Epilobium hirsutum is known as a robust and quite competitive plant, which often forms large pure stands on moist or wet nutrient rich soil. It thrives chiefly in man-made habitats in the cultural landscape. The most common habitats in the Åland Islands seem to be roadsides and road ditches. Other habitats include moist meadows, swampy lakeshores, ruderal ground, and bladder and seaweed wrack on a seashore and on moist sand on a beach. The cultivated plants at the shop and cafeteria in Brändö and the flowerpots in the market garden in Mariehamn represent more odd habitats.

E. hirsutum is favoured by manuring and nitrogen pollution and as it also is slightly calciphilous, the calcium rich soils of Åland are suitable for it (Kytövuori 1980, Jonsell & Karlsson 2010). As a light demanding plant, it cannot stand well overgrowth. Grazing and mowing may also be harmful (Jonsell 2010).

The localities of *E. hirsutum* in the Åland Islands do not show any distinct introduction pattern which is typical of this species for instance in the Swedish province of Småland where it has a somewhat similar, although a bit earlier introduction history (Edqvist & Karlsson 2007).

Although *E. hirsutum* has expanded during the last fifty years in Åland, it is not common yet and it has not been found in most of the eastern

archipelago area. It has not expanded as much as *Epilobium adenocaulon* Hausskn., another immigrant species which was first observed in the Åland Islands in 1920 and which has spread all over the area, especially along road and field ditches (Hægström & Hægström 2010). As an immigrant in our flora, *E. hirsutum* is now well established in the Åland Islands and it will probably be more common in the future. However, it seems that it is not a harmful invasive weed in Åland.

Table 1. The records of *Epilobium hirsutum* in the Åland Islands according to the literature, the database Kastikka (2012) and the authors' observations. The records are in chronological order and the information given in Finnish or Swedish is translated into English. Additional notes in square brackets. The coordinates are according to the Uniform Coordinate System (UCS): Grid 27 °E. In some cases, the coordinates are given more exactly than on the labels of voucher specimens or information in Kastikka (2012). In the cases with only three plus three coordinate numbers, the exact location is not known. For herbarium acronyms, see Index Herbariorum (2013). (OBS) = observation without voucher specimen.

In field ditches in the Åland Islands, without any other information (Prytz & Eneberg 1821). — According to Hjelt (1909–11), this information appears to be wrong. Sund, UCS 670:311, 20.VI.1878, A. Arrhenius (JYV). — This voucher specimen was, perhaps, not collected by Arrhenius in Sund in 1878, but a label for another plant was attached by mistake to the sheet with a specimen of *E. hirsutum* collected elsewhere.

Jomala, on the shore of a lake, UCS 669:310, 22.VII.1973, A. Aro 1969 (H).

Dalkarby [Möckelby, the locality is just some metres W of the border towards the village of Dalkarby], ditch bank, a clump of a few plants; the plant was found by the librarian Anja-Rita Fallström who lives next to the location, UCS 66913:31087, 5.VIII.1978, Törnroth 3021 (H).

Eckerö, Torp, on bladder and seaweed wrack on the seashore bay W of Långnabba, UCS 66936:30881, 2.VII.1979, Carl-Adam Hægström & Eeva Hægström (OBS).

Eckerö, Kyrkoby, Böle, the SE shore of lake Kattviken, several stands on the swampy lake shore, UCS 67029:30903, 3.VIII.1979, Carl-Adam Hægström 2354 (H).

Eckerö, Kyrkoby Böle, on the E side of the small seashore bay immediately N of Böle sund, one large stand and a few scattered individuals on the swampy shore, UCS 67024:30900, 3.VIII.1979, Carl-Adam Hægström 2350.

- Jomala, Möckelby, road ditch on the E side of the road about 300 m WNW of the vicarage, one small stand, first seen in the mid 1970's by Anja-Rita Fallström, UCS 66913:31087, 11.VIII.1980, Carl-Adam Hæggström 2694 (H) — This is the same locality where Törnroth collected the plant in 1978.
- Saltvik, Sälis, on the E side of the road Bartsgårdavägen about 240 m S of the crossroads in Kroklund, one stand with approx. 15 flowering shoots, UCS 67091:31118, 28.VII.1981, Carl-Adam Hæggström 3248 (H).
- Vårdö, Lövä, roadside on the W side of the road about 100 m SW of Jakos, approx. 10 shoots, UCS 67018:31336, 21.IX.1985, Carl-Adam Hæggström 5667 (H).
- Finström, Grelsby, in a gully near the hill Sotfallsberget, 5–6 about 160 cm high shoots, UCS 6704: 3112, 28.VII.1988, Paul Johansson (H).
- Mariehamn, Dalkarby, NW Strandnäs, one large stand in an open, cleared wood of the *Myrtillus* or *Oxalis-Myrtillus* type, UCS 66882:31080, 1.VIII.1988, Sonja Grönholm 126 (H) — This area is now a suburb with multi-storey building.
- Mariehamn, Sviby, Klinten, Rosendal's market garden, in flowerpots, UCS 66875:31075, 1988 (OBS) (Grönholm 1991).
- Mariehamn, Hindersböle, abundantly on a ditch bank at the meadow E of the tumulus, UCS 66887:31086, 1988, Sonja Grönholm (OBS) (Grönholm 1991). — This area is now overgrown with trees and shrubs.
- Mariehamn, Hindersböle, ditch bank about 200 m W of the trotting course, E of the road Dalkarbyvägen [Godbyvägen], UCS 66894:31084, 1988, Sonja Grönholm (OBS) (Grönholm 1991).
- Jomala, Hindersböle, immediately W of the trotting course, S of the tennis course, UCS 66894:31085, 1988, Sonja Grönholm (OBS) (Grönholm 1991). — Now probably a built area.
- Sund, Tosarby, fairly large roadside stand, UCS 6699: 3117–3118, 9.VIII.1990, Kaija Laine & Unto Laine (TUR).
- Saltvik, Village of Kroklund, by the road to Bartsgårda, c. 200 m S of the main road to Nääs, Road bank in densely populated area, UCS 6709:3118, 31.VII.1991, Raino Lampinen 13043 & Tuula Lampinen (H).
- Saltvik, UCS 6709:3111, 31.VII.1991, Raino Lampinen (OBS).
- Saltvik, UCS 6709:3112, 1.VIII.1991, Raino Lampinen (OBS).
- Finström, UCS 6701:3110, 3.VIII.1991, Raino Lampinen (OBS).
- Finström, village of Grelsby, 400 m NW of Södergård, E side of Stallhaga träsk dense stand on roadside, grass grown garden, UCS 67017:31108, 3.VIII.1991, Raino Lampinen 13225 (H, OULU).
- Lemland, Norrby, 700 m NW of the church of Lemland, road to the shore of Ullvik, roadside ditch, UCS 66831–66832:31151–31152, 6.VIII.1991, Lampinen, Raino 13434 & Tuula Lampinen (H, MRSN, TUR).
- Jomala, Ingby, at the crossroads between old main road Godbyvägen and the new main road Nya Godbyvägen, on sandy moist ditch bottom at the NE corner of the former cultivated field W of the new main road, UCS 669453:310934, 15.VII.1992, Hannu Kämäräinen (OBS).
- Jomala, Ingby, at the crossroads between old main road Godbyvägen and the new main road Nya Godbyvägen, on moist ditch bottom on the W side of the new main road between the N edge of the former cultivated field and the electrical power line, UCS 669456: 310934, 15.VII.1992, Hannu Kämäräinen (OBS). — Seen in the same place on 8.XI.2013 by the authors CAH and EH.
- Saltvik, Haga [Haga by], at the road from Näs to Bergö [Hagavägen], eight flowerings shoots in the road ditch on the E side of the road between the farms Persby and Björkängen, also seen in other places in the vicinity, UCS 670716:311455, 9.VIII.1993, Hannu Kämäräinen (H).
- Saltvik, Nääs, roadside ditch along 2–3 metres on the S side of the main road immediately E of the crossroads to Daglösa, UCS 67104:31145, 11.VIII.1993, Carl-Adam Hæggström 7518 (H).
- Brändö, Åva, in field ditch between the village centre and the shop, UCS 67200:31743, 24.VIII.1993, Sakari Hinneri (TUR).
- Jomala, Björnsby, Västergård, at the crossroads to Mariehamn and Jomalby, in the road ditch SW of the crossroads, UCS 669570:310984, 27.VII.1997, Pekka Valtonen (H). — The coordinates do not correspond with the road ditch SW of the crossroads. *E. hirsutum* was observed by the authors CAH and EH in the ditch SW of the crossroads in 2007 (see below).
- Eckerö, Storby, a large stand on the ditch verge on the W side of the road 100 m W of lake Kattviken, UCS 67032:30902, 11.VIII.1998, Carl-Adam Hæggström 7845 (H).
- Kökar, Österbygge, S part of the village, 50 shoots in a road ditch, UCS 66622:31638, 26.VII.2000, Seidi Virtanen & Tarmo Virtanen (TUR).
- Mariehamn: Ytternäs, Österängen, at two small brooks in the seashore copse east of the street Apelgränden, UCS 66838:31088; 7.VIII.2000, Carl-Adam Hæggström 8052 & Eeva Hæggström. — Voucher specimen collected, not yet included in H.
- Finström, Godby, the old [abandoned] wood chipping plant, ruderal ground, UCS 67006–67008:31134–31137, 6.VIII.2001, Ralf Carlsson & Carl-Adam Hæggström (OBS).
- Vårdö, Töftö, road ditch in the village, UCS 6696:3129, 5.VIII.2002, Carl-Adam Hæggström & Eeva Hæggström (OBS).
- Sund, Tosarby, on the western side of the road and in the road ditch along an about 100 m long distance 100–150 m E–SE of the former primary school, UCS 669938–669949:311777–311779, 5.VIII.2002, Carl-Adam Hæggström 8657 & Eeva Hæggström (OBS)

- Voucher specimen collected, not yet included in H. This locality may be the same where a collection was made by Kaija Laine & Unto Laine in 1990 (TUR).
- Sund, Tosarby, in the road ditch on the eastern side of the road 150 m NE of the former primary school, UCS 669959–669961:311776, 5.VIII.2002, Carl-Adam Hæggström & Eeva Hæggström (OBS).
- Saltvik, Sonnröda, on about 100 square metres on a moist meadow between the houses of Persberg and Emdal, UCS 67048:31206, 20.VIII.2003, Carl-Adam Hæggström & Eeva Hæggström (OBS). — Seen also on 8.XI.2013 by the authors CAH & EH.
- Saltvik, Ödkarby, Kroklund, ditch at the main road near the ditch Brattesdiket, UCS 67093:31123, 25.VII.2003, Carl-Adam Hæggström & Eeva Hæggström (OBS).
- Jomala, Österkalmare, Kalmarnäs, road ditch near the S end of the promontory, UCS 66853:31103, 4.VIII.2006, Carl-Adam Hæggström & Eeva Hæggström (OBS).
- Jomala, Björby, in the E ditch along the main road Nya Godbyvägen and in a field ditch about 100–200 m S of the road Björby bygata, UCS 66955–6:31097, 2004, Carl-Adam Hæggström & Eeva Hæggström (OBS). — Seen in the road ditch on 10.XI.2013 by the authors CAH and EH.
- Jomala, Björby, dense stands in the W road ditch along an approx. 50 m long distance at the crossroads between the main road Nya Godbyvägen and the roads Godbyvägen – Björby Bygata, UCS 669563–669570:310968–9, 2007, Carl-Adam Hæggström & Eeva Hæggström (OBS). — Seen in the same place on 8.XI.2013 by the authors CAH and EH.
- Jomala, Möckelö, Havsbadet, on moist sand at the beach, UCS 66854:31063, 16.VII.2008, Carl-Adam Hæggström & Eeva Hæggström (OBS).
- Brändö, Brändö by, in the centre at the road towards the church, at the stairs to the shop and cafeteria, perhaps cultivated, UCS 6714:3172, 30.VII.2008, Carl-Adam Hæggström & Eeva Hæggström (OBS).
- Kökar, Österbygge, ditch near the road about 200 m S of Nemmans, UCS 6662:3163, 15.VIII.2008, Carl-Adam Hæggström & Eeva Hæggström (OBS) — Most probably the same stand that was found by Seidi Virtanen & Tarmo Virtanen in 2000 (TUR).
- Mariehamn, Hindersböle, road ditch at the crossroads of Bolstavägen and Dalkarbyvägen, UCS 668895:310851, 2007–2013, Ralf Carlsson (OBS).
- Föglö, Finholma, at the road Överövägen between Finholma and Börkö, in the field ditch E of the road, UCS 66784:31393, 16.VIII.2008, Carl-Adam Hæggström & Eeva Hæggström (OBS).
- Saltvik, Lagmansby, road ditch about 100 m SW of Högtomt, 670534:311774, 2010–2013, Ralf Carlsson & Carl-Adam Hæggström (OBS).
- Jomala, Sviby, ruderal ground at the approach to the stone industry of Hellsten and other industry plants, UCS 66912:31075, 31.VIII.2012, Carl-Adam Hæggström & Eeva Hæggström (OBS).
- Geta, Höckböle, on the S side of the road Getavägen at the crossroads to Havsvidden and Getaön, UCS 671618:310970, 22.VIII.2012, Ralf Carlsson & Carl-Adam Hæggström (OBS).
- Saltvik, Kvarnbo, road ditch about 170 m WNW of the church, UCS 670518:311600, 10.VIII.2013, Ralf Carlsson (OBS) — The species was seen already c. ten years earlier in the same place.
- Geta, Höckböle, road ditch at the crossroads to Havsvidden and Getaön, UCS 671618:310970, 11.VIII.2013, Ralf Carlsson & Kajsa Sundberg (OBS) — The same locality as in 2012.
- Jomala, Möckelö, a stand below the leaning bird cherry tree at the parking place to the bird watching tower at Torpfjärden, at the wood edge towards W, UCS 66874:31057, 23.VIII.2013, Carl-Adam Hæggström & Eeva Hæggström (OBS).
- Finstrom, Grelsby, Stallhagen, moist soil at the SE end of lake Stallhaga träsk, UCS 670172:311081, 24.VIII.2013, Carl-Adam Hæggström & Eeva Hæggström (OBS) — Probably the same stand that was collected by Raino Lampinen 13225 (H, OULU) in 1991.
- Finstrom, Grelsby, Stallhagen, on ruderal soil in the yard E of the restaurant, UCS 670175:311089, 24.VIII.2013, Carl-Adam Hæggström & Eeva Hæggström (OBS).
- Saltvik, Haga by, road ditch at Ytterängen, UCS 67071:31137, 24.VIII.2013, Carl-Adam Hæggström & Eeva Hæggström (OBS).
- Lemland, Järsö, a small stand in the ditch at the E side of the road Langnäsavägen, 35 m N of the electricity box at the road Dragsviksvägen, UCS 66765:31198, 5.IX.2013, Carl-Adam Hæggström & Eeva Hæggström (OBS).
- Jomala, Sviby, Norrböle, two specimens on roadside about 15 W of the road Lövdalsvägen, UCS 668975:310810, 8.XI.2013, Carl-Adam Hæggström & Eeva Hæggström (OBS).
- Jomala, Ingby, at the crossroads between the new main road Nya Godbyvägen and Godbyvägen towards the village of Ingby, two dense stands in the road ditches on each side of the road, UCS 669438–669440:310929, 8.XI.2013, Carl-Adam Hæggström & Eeva Hæggström (OBS).
- Jomala, Björby, a dense stand in the W road ditch about 200 m N of the crossroads between the main road Nya Godbyvägen and the roads Godbyvägen – Björby Bygata, UCS 66959:31097, 8.XI.2013, Carl-Adam Hæggström & Eeva Hæggström (OBS).
- Jomala, Godby, one stand in a field ditch W of the main road Nya Godbyvägen about 200 m W of Bol, UCS 66996:31117, 8.XI.2013, Carl-Adam Hæggström & Eeva Hæggström (OBS).
- Saltvik, Haraldsby, road ditch on the SE side of the crossroads between Sundsvägen and Södernäsvägen, UCS 670160:311441, 8.XI.2013, Carl-Adam Hæggström & Eeva Hæggström (OBS).
- Saltvik, Haraldsby, Österåkrarna, several small stands in a ditch on a moist meadow immediately S of the

- main road Sundsvägen on the W side of the road to the new house area, UCS 67018:31153, 8.XI.2013, Carl-Adam Hægström & Eeva Hægström (OBS).
- Saltvik, Rangsby, a dense stand in the S road ditch about 100 m SE of the fire station, UCS 670531:311725, 8.XI.2013, Carl-Adam Hægström & Eeva Hægström (OBS).
- Jomala, Sviby, Nya Godbyvägen, a small stand in the W road ditch immediately S of the northernmost roundabout, UCS 668987:310800, 10.XI 2013, Carl-Adam Hægström & Eeva Hægström (OBS).
- Jomala, Möckelby, a small stand in the road ditch at the NW corner of the crossroads between Nya Godbyvägen and Norra Svibyvägen, UCS 669124:310813, 10.XI 2013, Carl-Adam Hægström & Eeva Hægström (OBS).
- Jomala, Björby, in the field ditch on the E side of the main road Nya Godbyvägen about 200 m NW of Norrgård, UCS 669602-3:310974-7, 10.XI 2013, Carl-Adam Hægström & Eeva Hægström (OBS).
- Finström, Godby, a small stand in the N road ditch at Getavägen about 100 m SE of Mattsson's supermarket, UCS 670034:311221, 10.XI 2013, Carl-Adam Hægström & Eeva Hægström (OBS).
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