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Ruderals and weeds in Godby, Åland Islands, SW Finland

Carl-Adam Hæggström & Eeva Hæggström

Carl-Adam Hæggström, Finnish Museum of Natural History, Botanical Museum, P. O. Box 7, FI-00014 University of Helsinki, Finland. E-mail: carl-adam.haeggstrom@helsinki.fi
Eeva Hæggström, Tornfalksvägen 2/26, FI-02620 Esbo, Finland. E-mail: eeva.haeggstrom@kolumbus.fi

The Åland Islands in SW Finland are known for their luxuriant vegetation with numerous calciphilic vascular plants. Ruderal plants are rather few compared to the adjoining regions of Finland and Sweden. However, new ruderal plants are occasionally found in Åland. We came across a ruderal site in the centre of the village of Godby, municipality of Finström, in 2002. Most of the organic topsoil had been removed and several rare ruderal species grew then on the open ruderal site. The site became more closed, resembling a meadow rather than a ruderal ground already in 2006 and later the vegetation developed into a tall and rough grown meadow with some shrubs and young trees. The following ruderal plants are treated more in detail: *Agrostemma githago, Anthemis tinctoria, Centaurea cyanus, Cichorium intybus, Dianthus deltoides* (cultivar), *Echium vulgare, Holcus lanatus, Leontodon hispidus, Lotus corniculatus* var. *sativus, Papaver dubium* subsp. *dubium, P. rhoeas, Phleum phleoides, Rumex thyrsiflorus, Senecio jacobaea, Thymus pulegioides, Trifolium dubium* and *Vicia tenuifolia*. Besides some trees and shrubs, 133 vascular plant taxa, most of them common in the Åland Islands, were observed growing in the ruderal site during the period 2002–2015. The origin of the ruderal flora is not known. It is suggested that at least some of the plants have originated from seeds in the former cultivated field. A deliberate sowing of flower seeds of foreign provenance cannot, however, be excluded, although we have not been able to prove it.

Introduction

The Åland Islands in southwestern Finland are known for a flora with numerous calciphilic vascular plants. The vegetation is in many parts luxuriant with species, which have a southwestern distribution in Finland. On the other hand, weeds and ruderal plants are rather few compared to the adjoining regions of Finland (e.g. Hämet-Ahti et al. 1998) and Sweden (e.g. Hultén 1971, Jonsell 2010). However, new weeds and ruderal plants are occasionally found in Åland, e.g. species probably introduced with logs imported from the Baltic Area to a wood chipping plant in Godby, municipality of Finström in the early 1990's (Hæggström et al. 2003) and ruderals on a waste ground on the island of Dånö, municipality of Geta, in 2014 (Carlsson et al. 2014).

An area with exotic ruderals were found by us at the main road northwards in the central part of Godby village, municipality of Finström. We studied it in 2002, 2003, 2006, 2007, 2009 and 2015. We visited the site also in 2004–2005, 2008 and 2010–2014, without making detailed studies then.

The vascular plant flora

The ruderal site is a former cultivated field (the coordinates are, according to the Uniform Coordinate System (UCS) Grid 27 °E, 670060–670066:311197–311208). The size of the site is approx. 60 m × 110 m. Most of the organic topsoil was removed from the field before 2002 and the vegetation was lax with spots of naked soil in that year. During the following years, the vegetation became more closed, and already in 2006, the site resembled a meadow rather than a ruderal ground. Later, the vegetation developed into a tall and rough grown meadow with some shrubs and young trees. During several years, the eastern part of the site has been managed as a park with a mown lawn with a few cultivated trees.

The ruderal site is bordered to the north by a hedge of trees and shrubs such as *Alnus glutinosa, Populus tremula, Salix caprea, S. cinerea, S. phylicifolia, Rosa dumalis* and cultivated *R. rugosa*. A few cultivated poplar trees (*Populus* sp.) grew in the hedge; the large poplar trees are dead since a few years. One sapling of this poplar species grows in the northern part of the site. An *Acer platanoides* and a *Fraxinus excelsior* grows at the southwestern corner of the site. A few trees and shrubs have been planted in the site. The following were seen in 2015: two about 7-metre-high *Betula pendula* trees side by side, one about 4-metre-high *Quercus robur* and two about 2-metre-high *Corylus avellana* shrubs. A few one to two metres high saplings and shrubs of *Betula pendula, Fraxinus excelsior, Rosa dumalis*, one shrub of *R. rugosa* and a couple of small *Sorbus aucuparia* grew in the site in 2015. A cultivated bramble (*Rubus corylifolius* coll.) was seen at the eastern margin of the site in 2007 but it disappeared later.

In all, 133 vascular plant taxa were observed in the field layer of the ruderal site (Table 1). The number of taxa was fairly low in 2002 and increased to an observed maximum in 2007, whereas it was lower in 2015. Abundant species during the latter years were, e.g. *Achillea millefolium, Centaurea jacea* (two different races, one with capitulas with pale brown bract appendages, and the other with dark brown bract appendages), *C. scabiosa, Galium verum, Lathyrus pratensis, Silene nutans, Trifolium medium, T. pratense* and the grasses *Alopecurus pratensis, Dactylis glomerata, Festuca ovina, F. rubra, Phleum phleoides*. *P. pratense* subsp. *pratense* and *Poa pratensis*.

The bulk of the species were common herbaceous meadow plants typical for the Åland Islands, such as *Achillea millefolium, Alchemilla acutiloba, A. monticola, Anthriscus sylvestris, Centaurea jacea, C. scabiosa, Cerastium fontanum* subsp. *vulgare, Galium verum, Geranium sylvaticum, Knautia arvensis, Lathyrus pratensis, Medicago lupulina, Plantago lanceolata, Potentilla reptans, Primula veris, Ranunculus acris, Rumex acetosa, Stellaria graminea, Trifolium medium, T. pratense, T. repens* and *Vicia cracca.* Common meadow grasses were *Agrostis gigantea, Alopecurus pratensis, Briza media, Cynosurus cristatus, Festuca ovina, F. pratensis, Phleum pratense* subsp. *pratense* and *Poa pratensis*. Some taxa typical of dry meadows and rock meadows were also found, such as *Alchemilla glaucescens, Arabidopsis thaliana, Arenaria serpyllifolia, Hieracium umbellatum, Hypericum perforatum, Lychnis viscaria, Rumex acetosella* subsp. *acetosella, Silene nutans, Vicia hirsuta, Vicia tetrasperma* and the annual grass *Bromus hordeaceus*.

The rest of the vascular plants were weeds and ruderals, many of them quite common in the Åland Islands, such as *Aegopodium podagraria, Artemisia vulgaris* var. *vulgaris, Capsella bursa-pastoris, Carduus crispus, Chenopodium album* coll.*, Cirsium arvense* var. *arvense, C. arvense* var. *maritimum, C. vulgare, Lamium hybridum, L. purpureum, Lapsana communis, Matricaria chamomilla, M. discoidea, Myosotis arvensis, Plantago major* subsp. *major, Rumex longifolius, R. obtusifolius, Stellaria media, Taraxacum* spp.*, Thlaspi arvense, Tripleurospermum inodorum, Tussilago farfara*, *Viola arvensis* and the grass *Lolium perenne*.

Rare ruderals

Several of the species in the ruderal site of Godby are rare in the Åland Islands. The following are worth mentioning:

Agrostemma githago – Sixteen specimens of this cereal field weed were seen in 2002 and more

than 100 specimens in 2003. None was seen later, probably because the vegetation became too dense for the seeds of this annual species to germinate. *Agrostemma githago* was previously recorded in all municipalities of the Åland Islands, with the exception of Kumlinge and Kökar (Lampinen et al. 2015a). The earliest dated knowledge is found in the paper by Bergstrand (1852). The species was collected during every decade from 1866 to the mid 1950's, and it was particularly frequently found during the 1930's. The last collection was from a rye field 300 m west of the church in the municipality of Jomala in 1962. A possible find in a field in the municipality of Saltvik in the mid 1970's was never confirmed (Hæggström et al. 1982). *A. githago* disappeared in Åland Islands during the latter part of the 20th century and it became simultaneously very rare in the rest of Finland, with one record only, in Turku, during the 21st century (Lampinen et al. 2015a).

Anthemis tinctoria – A few specimens grew in the ruderal site in 2003–2009. This species is often cultivated in flowerbeds and it is occasionally found as a garden escape. It has been found in all municipalities, with the exception of Brändö and Vårdö, between 1890 and 2008 (Lampinen et al. 2015b). During the 21st century, it was found by us in the municipalities of Hammarland in 2004, in Lumparland and Mariehamn 2006, and in Eckerö 2007. Further, we have found it as a garden escape in Kumlinge 2002 and 2008, in Saltvik in 2003 and in Sottunga in 2008.

Centaurea cyanus – A few specimens grew in the ruderal site in 2002, but it was not seen later. This cereal field weed was previously quite common in Finland (Hämet-Ahti et al. 1998, Lampinen et al. 2015c). It is also cultivated as an ornamental plant, usually with lilac, red, pink and white flowers besides the blue ones. *C. cyanus* has been found in the Åland Islands in all municipalities, except Hammarland, and it is still found in a few places. We have observed it in during the 21st century in eleven of the sixteen of the municipalities. The most recent observations were in two cereal fields in the municipality of Sund in 2015.

Cichorium intybus – Several specimens grew in the ruderal site in 2002–2015. Records of *C. intybus* are few in the Åland Islands before the 21st century. The first observation was in a rye field in Mångstäkta (Mångsteckta on the label) in the municipality of Sund in 1885 (Lampinen et al. 2015d). The following records are from the island of Dånö in Geta in 1901, on a field margin in Lumparland in 1901 and from the harbour of Mariehamn in 1912. One record regards a cultivated plant in Hammarland in 1931. The next record is from a roadside in Mariehamn in 1996. Between 2002 and 2015, it has been observed as a weed in the municipalities of Finström, Hammarland, Jomala, Kumlinge, Saltvik and Sund. Most of the recent records are on roadsides. *C. intybys* has recently been sown in fields grazed by cattle and sheep in Åland, e.g. in Jomala, Djurvik, Lemland Rörstorp and Mariehamn Strandnäs. Plants have spread from the fields to roadsides in all three places.

Dianthus deltoides – Two specimens of a cultivar with deep dark red flowers grew in the ruderal site in 2006. Such cultivars are seen in gardens and as garden escapes.

Echium vulgare – Several specimens grew in the ruderal site in 2002–2015 (Fig. 1). *E. vulgare* was first collected in the Åland Islands in the municipality of Finström in 1862 (Lampinen et al. 2015e). It was collected twice in Godby, namely in 1887 and 1895, the first in a cultivated field, the other in a meadow. During the period 1902–1996, *E. vulgare* was found ten times in six of the municipalities (Lampinen et al. 2015e). From 2001 onwards, *E. vulgare* suddenly became quite common along the roads of Åland (Hæggström & Hæggström 2015) with numerous localities in all municipalities, except Brändö. This expansion is partly due to introductions to gardens from Sweden, at least in Hammarland Mörby and Jomala Jomalaby. In Lemland, seeds of *E. vulgare* have been sown along roads since one specimen was found there in 1971 (Harberg 2015). Several of the recent records are connected to improvement of main roads (Hæggström & Hæggström 2015).

Holcus lanatus – A few specimens grew in the ruderal site in 2006. This ruderal grass has been found a few times in the Åland Islands between 1890 and 2014 (Lampinen et al. 2015f). The first

Fig. 1. A part of the ruderal site with *Echium vulgare* and *Papaver rhoeas* among other plants such as *Leucanthemum vulgare, Matricaria chamomilla, Myosotis arvensis* and the grasses *Alopecurus pratensis* and *Dactylis glomerata*. Åland Islands, Finström, Godby, June 14, 2007. Photo: C.-A. Hæggström.

record was in a garden in Saltvik in 1890. The following few records were on ballast in Hammarland Frebbenby in 1897 and in Mariehamn in 1905–1906 and 1930. Thereafter came a record in a hayfield in Jomala in 1937, in Hammarland in 1954 and in Geta in 1956. The next record is from 2001, when *H. lanatus* was found in the ruderal ground of an abandoned wood chipping plant in Finström Godby in 2001 (Hæggström et al. 2003). It was still growing there in 2012. Three further records are known from the 21st century: one in Jomala in 2010 and two in Geta in 2011 and 2014 (Carlsson et al. 2014).

Leontodon hispidus – More than ten specimens were seen in the ruderal site in 2003 and later. This meadow species is quite common in southern Sweden and fairly common in south-eastern Finland (Hultén 1971). It does not belong to the meadow flora of the Åland Islands. Previously, it has been found only once in Mariehamn in 1943 (Lampinen et al. 2015g). One uncertain find by Alvar Palmgren in Jomala is mentioned in the database KASTIKKA (Lampinen et al. 2015g).

Lotus corniculatus var. ***sativus*** – Some ten or more stands of this tall variety of the common meadow plant *L. corniculatus* was found in 2006. A few were still growing in the ruderal site in 2015. The variety has been reported from the municipality of Brändö in 1951, from Hammarland in 2006 and from Saltvik in 2002–2014 (Hæggström & Hæggström 2010, Lampinen et al. 2015h).

Table 1. The vascular plant taxa found on the ruderal site in Godby, municipality of Finström Åland Islands. Observations were chiefly made on July 8, 2002, June 23, 2003, July 1 and 4, 2006, June 14 and August 18, 2007 and September 20, 2015. The data regarding the trees and shrubs are for 2015. The nomenclature is mainly according to the Field Flora of Finland (Hämet-Ahti et al. 1998, 2005). The variety of a specimen of *Potentilla argentea* was not determined (*P. argentea* var. = *P. impolita* auct. p.p.).

Trees and shrubs

Acer platanoides, in the SW part
Alnus glutinosa, in the hedge at the N border
Betula pendula, two about 7-metre-high cultivated trees in the site; a few small trees near the main road Getavägen
Corylus avellana, two about 2-metre-high shrubs cultivated in the site
Fraxinus excelsior, a large tree in SW and a few small specimens near the main road Getavägen
Populus sp., cultivated in N, now dead; one small specimen in the site
P. tremula, in the hedge at the NW border
Quercus robur, a 4-metre-high cultivated tree
Rosa dumalis, large shrubs in the N hedge; a few small specimens in the site
R. rugosa, cultivated in the hedge at the N border and one small shrub in the site
Salix caprea, in the hedge at the N border
S. cf. *caprea* × *phylicifolia*, one shrub in the site near the main road Getavägen
S. cinerea, in the hedge at the N border
S. phylicifolia, in the hedge at the N border and along the main road Getavägen
Sorbus aucuparia, two small specimens in the site

Field layer species

Achillea millefolium, 2002–2015
Aegopodium podagraria, 2007
Agrostemma githago, 2002–2003; see the text
Agrostis capillaris, 2015
A. gigantea, 2002–2015
Alchemilla acutiloba, 2007–2015
A. cf. *filicaulis* var. *filicaulis*, 2007
A. glaucescens, 2007
A. monticola, 2007–2015
Allium oleraceum, 2002
A. vineale, 2015
Alopecurus pratensis, 2007–2015
Anthemis tinctoria, 2002–2009, see the text
Anthriscus sylvestris, 2007
Arabidopsis thaliana, 2007
Arenaria serpyllifolia, 2007
Armoracia rusticana, 2002
Arrhenatherum elatius, 2015
Artemisia vulgaris var. *vulgaris*, 2007–2015
Avenula pubescens, 2007
Brassica napus subsp. *oleifera*, 2002
Briza media, 2007–2015
Bromus hordeaceus, 2007
Calamagrostis epigejos, 2015
Capsella bursa-pastoris, 2002–2007
Carduus crispus, 2002–2007
Centaurea cyanus, 2002, see the text
C. jacea, 2002–2015
C. scabiosa, 2006–2015
Cerastium fontanum subsp. *vulgare*, 2007–2015
Chenopodium album, 2002–2015
Cichorium intybys, 2002–2015, see the text
Cirsium arvense var. *maritimum*, 2007
C. arvense var. *arvense*, 2007–2015
C. vulgare, 2007
Cynosurus cristatus, 2002–2007
Dactylis glomerata, 2015
Deschampsia cespitosa, 2007
Dianthus deltoides, 2006, see the text
Echium vulgare, 2002–2015, see the text
Elymus repens, 2015
Equisetum arvense, 2007–2015
Festuca ovina, 2002–2007
F. pratensis, 2002–2007
F. rubra, 2002–2015
Filipendula ulmaria, 2015
Galium album, 2007–2015
G. album × *verum*, 2015
G. uliginosum, 2003
G. verum, 2007–2015
Geranium pusillum, 2007
G. sylvaticum, 2007–2015
Heracleum sibiricum, 2007
Hieracium umbellatum, 2007–2015
Holcus lanatus, 2006, see the text
Hypericum maculatum, 2015
H. perforatum, 2002–2015
Knautia arvensis, 2007–2015
Lamium hybridum, 2002
L. purpureum, 2002–2007
Lapsana communis, 2002–2015
Lathyrus pratensis, 2002–2015
Leontodon autumnalis, 2007
L. hispidus, 2003–2015, see the text
Leucanthemum vulgare, 2015
Lolium perenne, 2007
Lotus corniculatus var. *sativus*, 2006–2015, see the text
Lychnis flos-cuculi, 2007
L. viscaria, 2002–2007
Malva moschata, 2009
Matricaria chamomilla, 2007
M. discoidea, 2002
Medicago lupulina, 2002
M. lupulina var. *glanduligera*, 2007–2015
M. lupulina var. *willdenowiana*, 2007
*Myosotis arvensi*s, 2002–2007
Papaver dubium subsp. *dubium*, 2007, see the text

P. rhoeas, 2002–2007, see the text
Phalaris arundinacea, 2015
Phleum phleoides, 2003–2015, see the text
P. pratense subsp. *pratense*, 2002–2015
Phragmites australis, 2007–2015
Plantago lanceolata, 2002–2015
P. major subsp. *major*, 2002–2007
P. media, 2007
Poa angustifolia, 2015
P. annua, 2015
P. nemoralis, 2015
P. palustris, 2007
P. pratensis, 2007–2015
Polygonum aviculare, 2015
Potentilla argentea var. *(P. impolita* auct. p.p.), 2007
P. reptans, 2007–2015
Primula veris, 2007– 2015
Prunella vulgaris, 2007
Ranunculus acris, 2007–2015
Rubus idaeus, 2015
Rumex acetosa, 2007–2015
R. subsp. *acetosella*, 2007– 2015
R. crispus, 2015
R. longifolius, 2007
R. obtusifolius, 2002
R. thyrsiflorus, 2007–2009, se the text
Senecio jacobaea, 2002–2015, see the text
S. viscosus, 2015
Silene dioica, 2007
S. nutans, 2006–2015
S. vulgaris, 2006–2007
Solidago virgaurea, 2009
Sonchus asper var. *asper*, 2015
Stellaria graminea, 2007–2015
S. media, 2007
Tanacetum vulgare, 2015
Taraxacum spp., 2002–2015
Thlaspi arvense, 2002–2007
Thymus pulegioides, 2007, see the text
Tragopogon pratensis, 2007
Trifolium arvense, 2007
T. dubium, 2002–2006, se the text
T. hybridum, 2007–2015
T. medium– 2002–2015
T. pratense, 2002–2015
T. repens, 2002–2015
Tripleurospermum inodorum, 2002–2007
Tussilago farfara, 2002–2015
Urtica dioica, 2015
Veronica arvensis, 2002–2007
V. officinalis, 2007
Vicia cracca, 2007–2015
V. hirsuta, 2007–2015
V. sepium subsp. *sepium*, 2015
V. tenuifolia Roth– 2006–2009, se the text
V. tetrasperma, 2002–2007
Viola arvensis, 2002–2007

Papaver dubium subsp. ***dubium*** – Seven specimens were seen in the ruderal site in 2007. It was not found later. *P. dubium* is a weed in cereal fields and other arable fields and on ruderal ground, e.g. on ballast soil. It has been found in six of the Alandian municipalities (Lampinen et al. 2015i). The most numerous observations are from Bolstaholm in Geta, where it has been found in different arable fields between 1885 and 2004. Another place in Geta is Finnö, where it was collected in a rye field in 1907 and 1925. It was collected on ballast in Frebbenby in Hammarland in 1884 and 1906, in Jomala Möckelö in a loading place in 1919, in Mariehamn in the western harbour in 1909, 1919 and 1945 and in Sund on gravelly soil at the Mediaeval castle of Kastelholm in 1948 and in a cucumber field in 1954. Further, it was observed in the island of Nåtö in Lemland on gravel in a courtyard in 2007 and in one of the streets in central Mariehamn in 2015.

Papaver rhoeas – A few specimens grew in the ruderal site in 2002–2007 (Fig. 1). It was not seen later. The first records in Åland were from ship ballast in Hammarland Frebbenby in 1884 and the harbour (or harbours) of Mariehamn in 1886, 1905, 1906 and 1930 (Lampinen et al. 2015j). Records from cultivated fields came later: in a rye field in Vårdö Mickelsö 1930, in a fallow field in Sund in 1942, and in an oat field and a wheat field in Haga by in Saltvik in 1980–1981. Most of the records between 1982 and 2015 are from roadsides, lawns and soil heaps (Lampinen et al. 2015j). The most spectacular occurrence is in a ruderal site with a heap of soil in Jomala Södersunda where hundreds of *P. rhoeas* flowered in 2014 and 2015.

Phleum phleoides – One tuft of this protected grass (Hæggström & Koistinen 1999) was seen in the ruderal site in 2003. Later, the grass spread in the ruderal site and at least one hundred tufts were noted already in 2006. It was one of the dominating grasses on the site in 2015 where it grew preferably on soil mounds of ants (*Lasius* sp.). *P. phleoides* was first collected in Finström Godby in 1878, where it grew on the Iron Age barrows next to the centre of the village, about 500 metres southeast of the ruderal site. It was also collected in a dry meadow in Eckerö Storby a few days lat-

er the same year (Lampinen et al. 2015k). These two localities, together with a meadow next to the church of Sund, have been those where botanists have frequently collected it during the late 19th and the 20th centuries (Lampinen et al. 2015k). Besides the three localities mentioned above, *P. phleoides* has been found in the municipalities of Hammarland (2 localities), Jomala (4), Kökar (1), Mariehamn (1), Saltvik (2) and Sund (3 further localities) (Lampinen et al. 2015k).

Rumex thyrsiflorus – Two specimens of this weed was seen in the ruderal site in 2007–2009 and during a few more years. The first record is from Bolstaholm in Geta in 1858 (Lampinen et al. 2015l). During the 1930's, Eklund (1958) found it in the eastern archipelago municipalities of Brändö (5 localities), Kumlinge (15 localities), Kökar (7 localities) and Sottunga (14 localities). Two records were made in 1983, in the municipalities of Saltvik and Sund. *R. thyrsiflorus* has been found in several places between 2004 and 2015. Besides the ruderal ground in Godby, it has been found in Hammarland (several small stands along roads in the villages of Bredbolstad, Bovik, Lillbolstad and Sålis with massive stands along the road Aspbackavägen in 2015), in Lemland (two roadside localities), in Mariehamn (roadside) and in Saltvik (roadside).

Senecio jacobaea – One flowering specimen was seen in the ruderal site in 2002 and 2003 and a few specimens later on, but not in 2015. This weed plant was collected for the first time in Lemland in 1891 (Lampinen et al. 2015m). *S. jacobaea* has been recorded 16 times in Eckerö, Finström, Hammarland, Jomala, Lemland, Mariehamn and Vårdö between 1904 and 1996. During the 21st century, it was found also in another place in Godby in 2008 (leaf rosettes only, the determination of the species somewhat uncertain) and in a ruderal site in Geta Dånö in 2014 (Carlsson et al. 2014).

Thymus pulegioides – A few specimens were seen in the ruderal site in 2007. This cultivated ornamental and spice plant was found in a field margin in Vårdö in 1897, in a dry meadow in Geta in 1919, and at a field margin in Föglö in 1930 (Lampinen et al. 2015n). It has been seen again in Vårdö on roadsides and in a dry meadow between 1923 and 2015. It has also been found in Saltvik Ovanåker on a road verge, where it was obviously planted in 2008.

Trifolium dubium – One small plant was seen in the ruderal site in 2002 and a few plants in 2003–2006. It was not observed in 2009 or later. This plant species was first found on ship ballast in Frebbenby in Hammarland in 1890 (Lampinen et al. 2015o). It has later been observed in Eckerö Storby at the 19th century Custom's building and at the overgrown ballast heaps at Käringsund between 1945 and 2015. Further ephemeral records have been made on lawns at the canal of Lemström in Jomala / Lemland during the period 1897–1924 and in two other places in Jomala in 1994 and 2008 (Lampinen et al. 2015o).

Vicia tenuifolia Roth – One stand was first observed in the ruderal site of Godby in 2006. Since 2007, it formed a dense stand on about one square metre (Fig. 2). It could not be found in September 2015.

Discussion

We have tried to find out if the origin of the flora of the ruderal site in Godby is the result of an introduction by man. However, none of those people we have contacted has had any idea of the origin. Some of the species grew in a natural way, but a deliberate sowing of flower seeds of foreign provenance cannot, however, be excluded.

The sudden appearance of the rare weeds *Agrostemma githago, Papaver dubium* and *P. rhoeas* in the ruderal site of Godby was surprising. Both *A. githago* and *P. dubium* have been regarded as more or less extinct in the flora of Finland (Hämet-Ahti et al. 1998). Further, the seeds of these species have been supposed to winter among cereal seeds in the barn rather than in the soil of the field. The seeds of *Agrostemma githago* can, however, be viable for long periods (Jalas 1965). As *P. rhoeas* occurred during several years (at least 2002–2007) in the ruderal site in Godby, it must have propagated by seed there. The abundant presence of *P. rhoeas* on the ruderal site in Jomala Södersunda in 2014 and 2015

Fig. 2. The ruderal site resembles a meadow with the stand of *Vicia tenuifolia* Roth in the centre. Other plants in flower are *Leucanthemum vulgare* and *Silene nutans* (to the right). The eastern part of the former cultivated field is now a lawn. Åland Islands, Finström, Godby, June 14, 2007. Photo: C.-A. Hæggström.

clearly points towards a seedbank in the soil and as there were flowering specimens in both years, the seeds must have been wintering in the soil. In addition, other sites with *P. rhoeas* occurring on roadsides and in lawns year after year indicate the presence of viable seeds in the soil. Eklund (1958), refers to a stand of *P. rhoeas* in an old garden in Ab, Korpo Korpogård where the species propagated by seed. Thus, we suggest that the occurrence of the three weed species in Godby is due to a seed bank in the soil, which was exposed when the topsoil was removed. Some of the other weed species in the ruderal site may also had a viable seed bank, which germinated when they were exposed.

On the other hand, all the few recent observations of *Agrostemma githago* in Uppland, next to the Åland Islands on the western side of the Alandian Sea, are probably of deliberate cultivated origin (Jonsell 2010). They have been growing in yards of houses, in gardens, on lawns, on road verges and on ruderal ground. As for the two *Papaver* species, *P. dubium* is fairly common in Uppland, especially in the eastern part and even in the outer archipelago area (Jonsell 2010). It was previously a cereal field weed but nowadays it is chiefly found on roadsides, in railway yards, gravel pits and other ruderal sites (Jonsell 2010). *P. rhoeas* is rather rare in Uppland with most of the observations in the eastern part and none in the outer archipelago area (Jonsell 2010). This species is a constituent in flower seed mixtures, spread on roadsides by the Swedish national road administration, and nowadays it is found in roadsides, railway yards, gravel pits and other ruderal sites (Jonsell 2010).

Of the other ruderal plants treated above, *Anthemis tinctoria* is common in Uppland on dry

sandy soils in different more or less ruderal sites such as roadsides, railway embankments, sandy yards, and old sand and gravel pits (Jonsell 2010). The rather few records in Åland correspond with the Swedish ones. *Centaurea cyanus* is fairly common in Uppland and it occurs still in cereal fields, but also in different cultural environment, e.g. in roadsides, at farms and other buildings, in railway areas, in ditches and new sown lawns and on ruderal ground (Jonsell 2010). The situation is similar in the Åland Islands: some observations are from cereal fields but the majority are from different types of ruderal habitats. Thus, *C. cyanus* can be regarded both as a weed in ruderal habitats and a cereal field weed. One observation by us in a ruderal habitat in Mariehamn in 2006 was of the multi-coloured cultivar.

Another site with some exotic species were investigated by us in Norrboda in the municipality of Lumparland on August 2, 2006 (UCS 66879:31268). The site was a former arable field, which at our visit resembled a weedy flowerbed. Among the species at this site, the following may be mentioned: *Anthemis tinctoria, Centaurea cyanus, Daucus carota* subsp. *carota*, *Helianthus* sp., *Lupinus polyphyllus* and *Papaver rhoeas* besides more common weeds such as *Galium spurium* subsp. *vaillantii, Lamium hybridum, Lolium perenne, Lysimachia nummularia* and *Sonchus arvensis* var. *arvensis*. Three of the exotic species, viz. *Anthemis tinctoria, Centaurea cyanus* and *Papaver rhoeas,* were common to the ruderal site in Godby.

Cichorium intybus has a southern distribution in Sweden and it has been rather rare in Uppland; the number of observations have, however, increased recently (Jonsell 2010). As it is cultivated in pastures and hay fields it also occurs as an escape on roadsides, railway embankments and ruderal ground. The situation is similar in the Åland Islands, as it has been cultivated for fodder in both pastures and hay fields during the last two decades. *C. intybus* has been found throughout Finland, chiefly in habitats of ruderal character (Hämet-Ahti et al. 1998), with several records since 2000 (Lampinen et al. 2015p).

Echium vulgare is fairly common in Uppland, especially in the southern part (Jonsell 2010). Its habitats are sandy and gravelly cultural sites, such as sand pits, railway stations and embankments, and roadsides. It has increased its area and now it grows in all kinds of cultural habitats. The warmer climate, especially the mild winters hitherto during the 21st century, has probably been favourable for the wintering of the leaf rosettes (Jonsell 2010). This applies also for southern Finland where *E. vulgare* has been found in an increasing number of localities during the last decades (Hæggström & Hæggström 2015).

Rumex thyrsiflorus is rare in Uppland (Jonsell 2010). Old observations were on sandy and gravelly ground, such as railway yards and sand yards. Today it is found chiefly along roads, because its seeds are included in grass seed mixtures sown on roadsides and road verges. Some of the lately found stands of *R. thyrsiflorus* are probably of grass seed mixture origin from Sweden, as it suddenly appeared on roadsides immediately after reconstruction of the road. The occurrence in the ruderal site in Godby is, however, not of that kind. The massive occurrence in Hammarland along the road Aspbackavägen is surprising, because, as far as we know, this road has not recently been repaired or improved.

Senecio jacobaea is rather rare in Uppland, but it has become more common during later years, and it is common in the Norrtälje area (Jonsell 2010). We have observed the dense and frequent stands of *S. jacobaea* that grow along the main road from the ferry harbour of Kapellskär to the vicinity of the town of Norrtälje. Typical habitats in Uppland are pastures, road verges, railway stations and roadsides (Jonsell 2010). The origin of the few plants in the ruderal site in Godby is not known. In Dånö in Geta, where one plant grew in a waste ground in 2014, the origin may be flower shop garbage. However, *S. jacobaea* is not cultivated as an ornamental plant, as far as we know.

Of the two grasses, *Holcus lanatus* is a rather rare species in Uppland (Jonsell 2010). It was previously cultivated for hay. It occurs in abandoned cultivated fields, old leys, on roadsides, in old gravel and sand pits and other ruderal sites. *Phleum phleoides*, on the other hand, is a fairly common calciphilic species of the steppe flora, occurring in dry meadows, esker slopes and barrows (Jonsell 2010). According to Eklund (1946), *P. phleoides* is moderately calciphilic (German: stark kalkhold) and strongly hemerophilic in the

Åland Islands. The abundant occurrence in the ruderal site of Godby is unexpected, as this grass is not known as a ruderal plant in the Åland Islands. However, most of the records in mainland Finland are in ruderal sites, such as railway embankments and a scrap area (Lampinen et al. 2015q).

The following three species, *Leontodon hispidus, Trifolium dubium* and *Vicia tenuifolia* are very or extremely rare in Uppland (Jonsell 2010). The two first mentioned are mostly ephemeral, growing in lawns, dumps and other ruderal habitats. *V. tenuifolia* is a southern species in Sweden with two old and two new records in Uppland (Jonsell 2010).

Leontodon hispidus is fairly common in the southern part of mainland Finland, although it has become rarer during the latter decades (Rousi 1980, Hämet-Ahti et al. 1998). *Trifolium dubium* occurs in lawns and ruderal sites in mainland Finland. *Vicia tenuifolia* has been found in south Finland in the harbour area of Valko in Loviisa in 1950 and 1957 and at a roadside in Helsinki in 1970 (Lampinen et al. 2015r). The records from Tampere in 1960–1963 are not reliable, as the collector has given false information on labels of many other of his voucher specimens preserved in H (the Herbarium of the Finnish Museum of Natural History in Helsinki).

The ruderal site was quite open with bare soil spots in 2002. The number of species found then was lower than a few years later when several meadow plants together with weed and ruderal species occurred side by side (Fig. 2). Later the site turned into a meadow with many tall species and some of the ruderal species found in 2002 and 2003 had disappeared. In September 2015, the number of species had still decreased. The meadow is slowly growing into an unmanaged meadow with shrubs and trees (Fig. 3). The

Fig. 3. Almost the same view of the ruderal site as in Fig. 2. Two about 7-metre-high cultivated birches (*Betula pendula*) grow near the spot where *Vicia tenuifolia* used to grow. The meadow vegetation is tall and rough. Åland Islands, Finström, Godby, September 20, 2015. Photo: C.-A. Hæggström.

development towards a more common vegetation is taking place. However, as the site is located in the centre of Godby, it may be used in some way. There is a plan to extend the park with lawns to cover the whole area. Our suggestion is that the ruderal site should be managed as a meadow with late mowing of the sward, above all as the protected grass *Phleum phleoides* grows there.

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