

Ruderal vascular plants on a waste ground in the island of Dånö, Åland Islands, SW Finland

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The Åland Islands, SW Finland, are known for luxuriant vegetation with numerous calciphilic vascular plants, but 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 waste ground in the island of Dånö, municipality of Geta, on which several non-familiar vascular plants grew. The waste ground has been used for dumping flower shop garbage and thus some unfamiliar plants have been dumped there. The following species have not been found previously as ruderal plants in the Åland Islands: *Allium sativum*, *Cucumis melo*, *Dipsacus fullonum*, *Hedera helix*, *Inula helenium* and *Lactuca serriola*. Several other more or less rare ruderals were also found on the waste ground: *Bromus secalinus*, *Conyza canadensis*, *Holcus lanatus*, *Lepidium densiflorum* subsp. *neglectum* and *Senecio jacobaea*. Three garden shrubs, *Rosa spinosissima*, *Symphoricarpos albus* var. *laevigatus* and *Salix viminalis* grew together with more common garden ruderals, such as *Digitalis purpurea*, *Malva moschata* and *Saponaria officinalis*. A total of 137 vascular plant taxa, most of them common in the Åland Islands, were observed growing on the waste ground.

Introduction

The Åland Islands in southwestern Finland are known for luxuriant vegetation with numerous calciphilic vascular plants in many places. On the other hand, ruderal plants are rather few compared to the adjoining regions of Finland (e.g. Hämet-Ahti et al. 1998, Lampinen et al. 2014) and Sweden (e.g. Jonsell 2010). However, every now and then, new weeds and ruderal plants are found in Åland.

During an excursion along a gravel road on the southern promontory of the island of Dånö, municipality of Geta, NW part of the Åland Is-

lands, the author RC came across a waste ground where several non-familiar vascular plants were growing. As there were some species, which have not earlier been observed as ruderals in the Åland Islands as well as some other rarely observed ruderals, we studied the locality closer.

The vascular plant flora

The waste ground is a rather flat area of about 40 m × 80 m in size located about 35 m above the sea level between two somewhat higher rocky hill-tops: Söderberg about 43 m high on the western



Fig. 1. A general view of the central part of the waste ground with a heap of fresh flower shop garbage. Åland Islands, Geta, Dånö, October 16, 2014. Photo: C.-A. Hægström.

side and an about 40 m high hill on the eastern side. This rocky terrain is mostly covered with pine and lichen heath very poor in vascular plant species.

The gravel road runs through the waste ground; most it lies west of the road. It has been used for dumping soil, boulders and, among others, flower shop garbage.

In all, 137 vascular plant taxa were observed growing on the waste ground during four separate visits on July 31, August 7, August 15 and October 16, 2014 (Table 1). Further, four taxa of potted ornamental plants still alive were seen on the flower shop garbage heap, namely a feather palm, two unidentified species of *Echeveria* and unidentified orchids. They were dead on October 16, 2014, when two dead potted shrubs of *Buxus sempervirens* L. were observed.

A few domestic tree and shrub species grew mainly along the forest edges at the margins of

the waste area. The following taxa were noted: *Betula pendula*, *B. pubescens*, *Fraxinus excelsior*; *Juniperus communis*, *Pinus sylvestris*, *Populus tremula*, *Ribes nigrum*, *R. rubrum* coll., *Rosa caesia*, *Salix caprea* and *Sorbus aucuparia*.

The bulk of the taxa were common herbaceous meadow plants typical of the Åland Islands, such as *Achillea millefolium*, *Alchemilla glaucescens*, *Allium oleraceum*, *Angelica sylvestris*, *Anthriscus sylvestris*, *Arabis hirsuta*, *Arenaria serpyllifolia*, *Campanula rotundifolia*, *Centaurea jacea*, *Filipendula ulmaria*, *F. vulgaris*, *Fragaria vesca*, *Galium verum*, *Geum urbanum*, *Hypericum perforatum*, *Lathyrus pratensis*, *Leontodon autumnalis*, *Leucanthemum vulgare*, *Origanum vulgare*, *Pilosella officinarum* coll., *Pimpinella saxifraga*, *Potentilla reptans*, *Ranunculus acris*, *Stellaria graminea*, *Trifolium repens*, *Verbascum thapsus*, *Veronica officinalis*, *Vicia cracca*, *Vicia hirsuta*, *V. sepium* subsp. *sepium* and *V. tetrasper-*

ma. Several common grasses were noted: *Agrostis capillaris*, *A. gigantea*, *Alopecurus pratensis*, *Calamagrostis epigejos*, *Dactylis glomerata*, *Festuca arundinacea*, *F. ovina*, *F. rubra*, *Melica nutans*, *Phleum pratense* subsp. *pratense*, *Poa angustifolia* and *P. pratensis*. A few meadow sedges were also found: *Carex leporina*, *C. pilulifera* and *C. spicata*.

Plants typical of woods and rocky ground were few. The following taxa were noted: *Calluna vulgaris*, *Deschampsia flexuosa*, *Dryopteris carthusiana*, *Dryopteris filix-mas*, *Luzula pilosa*, *Moehringia trinervia*, *Mycelis muralis*, *Pteridium aquilinum* subsp. *latiusculum*, *Poa nemoralis*, *Senecio sylvaticus* and *Vaccinium vitis-idaea*.

Some plants typical of moist soil were also found, e.g. *Carex canescens*, *Epilobium adeno-caulon*, *Equisetum arvense*, *Galium palustre* subsp. *palustre*, *Juncus articulatus*, *J. conglomeratus*, *Prunella vulgaris*, *Ranunculus repens* and *Veronica scutellata*.

The following four species found on the waste ground are mainly growing on seashores in the Åland Islands: *Phalaris arundinacea*, *Phragmites australis*, *Rumex crispus* and *Trifolium fragiferum*. However, *Phalaris* and *Phragmites* occur frequently in ditches and other moist places and *Rumex crispus* is also found as a ruderal plant on roadsides, in farmyards, etc.

Typical common ruderal and weedy plants were quite abundant, e.g. *Atriplex patula*, *Che nopodium album*, *Cirsium arvense* var. *arvense*, *Cirsium vulgare*, *Gnaphalium uliginosum*, *Lapsana communis*, *Myosotis arvensis*, *Plantago major* subsp. *major*, *Polygonum aviculare*, *Rumex longifolius*, *Senecio viscosus*, *Senecio vulgaris*, *Sonchus asper* var. *asper*, *S. oleraceus* var. *oleraceus*, *Stellaria media*, *Tripleurospermum inodorum* and *Tussilago farfara*.

Ruderals new to the Åland Islands

Allium sativum L. – One flowering specimen of garlic grew in the central part of the waste ground. This species has not been previously found as a ruderal plant in the Åland Islands. It has, however, been found twice in Finland as a ruderal plant (Kastikka 2014a). The first observation was by Kaija Laine, Unto Laine and Jaakko Nurmi in Ab,



Fig. 2. One specimen of *Allium sativum* grew on the waste ground. It probably belongs to the *longicuspis* group of garlics. Åland Islands, Geta, Dånö, August 7, 2014. Photo: C.-A. Hæggström.

Uusikaupunki (UCS Grid 27° E 67592:31954), on a ruderal site together with *Urtica dioica* in 2006. The second observation was by Jari Särkkä in Om, Raahe (UCS Grid 27° E 71768:33831), on a refuse dump in 2007. It seems that *A. sativum* has not been observed as a ruderal plant in Sweden (Edqvist & Karlsson 2007) or Denmark (Mr. Erik Hammer, Åbyhøj, Denmark, e-mail, October 26, 2014). A note of it growing in Rakkestad in the county of Østfold in southeastern Norway is included in the Norwegian field flora (Lid & Lid 2005).

The specimen in Dånö probably belongs to the *longicuspis* group (Dr. Joachim Keller, IPK, Gatersleben, Germany, e-mail, October 6, 2014; see also IPK 2010-2013). *A. longicuspis* Regel is an ancient garlic from Central Asia and it forms, together with *A. sativum*, a species complex (Maass & Klaas 1995, Kamenetsky et al 2004).

A. sativum is cultivated, mainly as a spice and medicinal plant. It is also used as an ornamental plant, and the specimen may have been introduced by the flower shop garbage to the waste ground in Dånö. However, the flower shop in question does not sell *A. sativum*.

***Cucumis melo* L.** – One flowering and fruiting plant of this garden vegetable grew in the central part of the waste ground. This is the first observation of *C. melo* as a ruderal plant in the Åland Islands. It has been found in almost twenty localities in south and central Finland (Kastikka 2014b, Lampinen et al. 2014).

***Dipsacus fullonum* L.** – One flowering specimen grew in the mid part of the waste ground. This species is new as a ruderal to the Åland Islands. *D. fullonum* has been found only once as a ruderal plant in Finland, in Ab, Vihti, Jättölä (UCS Grid 27° E 6696:3358, Pentti Alanko, Visa Lipponen & Olavi Niemi, observation September 20, 2011)

(Kastikka 2014c). There it was characterised as a casual alien garden escape.

D. fullonum has been found in numerous places in the southern part of Sweden northwards to Uppland (Jonsell 2010, Hatikka 2014). It is cultivated as an ornamental plant and it spreads easily from gardens to waste heaps. It grows as a native plant in Central and South Europe and in the Near East.

***Hedera helix* L.** – One specimen grew at the western edge of the waste ground. The common ivy does not belong to the indigenous flora of Finland. It occurs, however, as a cultivated ornamental plant outdoors, for instance in the city of Mariehamn in the Åland Islands, although it is not included in the Finnish flora of trees and shrubs (Hämet-Ahti et al. 1992). One specimen grows on a black alder at the southern shore of the island of Järsö in the municipality of Lemland, about 10 km south of Mariehamn. This specimen seems to have been planted, too. The nearest natural



Fig. 3. A vigorous specimen of *Cucumis melo* grew on the rubbish heap. Later in the season it developed fruits. Åland Islands, Geta, Dånö, August 7, 2014. Photo: Ralf Carlsson.



Fig. 4. The sole specimen of *Dipsacus fullonum* in flower. Åland Islands, Geta, Dånö, July 31, 2014. Photo: Ralf Carlsson.

stands for *H. helix* are located in Södermanland just south of Stockholm in Sweden and in the islands of Hiiumaa and Saaremaa in Estonia (Hultén 1971).

Inula helenium – One leaf rosette grew in the central part of the waste ground. This ornamental plant has not been found earlier as a ruderal plant in the Åland Islands, although it is occasionally cultivated there (Hæggström & Hæggström 2010). It is found as a garden escape and ruderal plant here and there in southern Finland northwards to about 65° N lat. (Lampinen et al. 2014).

Lactuca serriola – One specimen with five shoots of this species new to the Åland Islands grew at the SW edge of the waste ground. As the leaves of the plant were unlobed, it belongs to forma *integrifolia* (S.F. Gray) D. Prince & R.N. Carter (Prince & Carter 1977, Rich & Jermy 1998).

L. serriola occurs as a native plant in southern, western and central Europe, northern Afri-

ca and western Asia (Feráková 1976, Hultén & Fries 1986). It grows as an introduced weed in North America, especially in eastern USA (Hultén & Fries 1986).

L. serriola appeared in the Nordic countries as a ruderal plant already during the 18th century, for example in Sweden in 1795 (Anderberg 2005). It is unevenly distributed in the southern part of Sweden with concentrations in certain urban and coastal areas (e.g. Genberg 1977, Weimarck & Weimarck 1985, Sterner 1986, Rydberg & Wanntorp 2001, Bertilsson et al. 2002, Fröberg 2006, Edqvist & Karlsson 2007, Jonsell 2010). It has increased its area, especially after 1970 (e.g. Rydberg & Wanntorp 2001, Maad et al. 2009, Jonsell 2010).

L. serriola is fairly common in Denmark (Frederiksen et al. 2012) and it is common in the cities of southeastern Norway; otherwise it is rare there (Lid & Lid 2005).

The first two records of *L. serriola* in Finland were from Oa, Vasa on the west coast of Finland



Fig. 5. *Lactuca serriola* f. *integrifolia* grows among twigs of some ornamental plants. A green leaf of *Hedera helix* is seen to the right between *Lactuca* leaves. Åland Islands, Geta, Dånö, October 16, 2014. Photo: C.-A. Hæggröm.

in 1882. Walter Laurén collected it at the steam mill (H) and the acronym H. I. at the steam boat jetty (VOA; for herbarium acronyms, see Index Herbariorum 2014). The third collection was also made on the west coast of Finland. This time *L. serriola* was found on ship ballast by N. Aschan in the island of St, Råfsö next to Björneborg in 1895 (H). Until 1950, only eleven new records were made, for instance next to the Botanical

garden of Ab, Turku and in the harbour area of Oa, Kristiinankaupunki as introduced by German military transports during the Second World War. From the 1950s onward, the number of observations of *L. serriola* increased steadily with a concentration in the Turku and Helsinki areas (Kastikka 2014d, Lampinen *et al.* 2014). The northernmost finds are just south of Oulu at about 65° N lat. (Lampinen *et al.* 2014).

As *L. serriola* is quite common in Uppland on the other side of the Aland Sea, even in the outer archipelago (Jonsell 2010), it is strange that the species was not found in the Åland Islands until now. The waste ground in Dånö is also a somewhat unexpected place for the first find. An expected place would rather have been one of the ferry harbours or roadsides with frequent traffic.

The achenes of *L. serriola* disperse anemochorously; however, the distance over open waters from Sweden (Uppland) to Åland seems to be too long for anemochorous dispersal. The specimen of *L. serriola* in Dånö may therefore have been growing as a weed in a flowerpot and was subsequently thrown on the waste ground.

Other interesting ruderals

Bromus secalinus – This rye field weed was previously quite common in Finland, but during the last decades, the number of new finds have decreased (Lampinen et al. 2014). *B. secalinus* was found in quite many localities in 15 of the 16 municipalities of the Åland Islands until 1957 (Kastikka 2014e). However, thereafter there are only eight finds in four municipalities, including this on Dånö, between 1997 and 2014.

Conyza canadensis – This ruderal plant was first found as a ballast plant in Mariehamn in 1904 and 1905 (Hæggström & Hæggström 2010, Kastikka 2014f). The next find is also from Mariehamn in 1988; however, the determination of the species was uncertain (Grönholm 1991). The species began to invade roadsides, waste grounds, etc. from 2005 onwards and it is now known from seven of the sixteen municipalities of Åland, the waste ground in Dånö included.

Holcus lanatus – One tussock of this grass grew in the central part of the waste ground. *H. lanatus* is a casual ruderal plant in the Åland Islands. It has previously been found in eleven localities in six of the municipalities of the main island of Åland (Hæggström & Hæggström 2010, Kastikka 2014g). Two of the finds were on ship ballast.

Lepidium densiflorum* subsp. *neglectum – A few specimens were growing in the central part of the waste ground. This taxon has been collected in the Åland Islands in two places in the city of Mariehamn between 1945 and 1956 (Hæggström & Hæggström 2010, Kastikka 2014h). It is a rare ruderal plant in Finland with scattered finds in the southern half of the country (Lampinen et al. 2014). The bulk of the observations or collections were made before 1980 and the last is from 1991 (Kastikka 2014h).

Rosa spinosissima – One shrub grew on the soil heap by the road at the western part of the waste ground and another on the soil heap by the road at the eastern part. This ornamental shrub quite often occurs in abandoned gardens. Although the distribution map in Hämet-Ahti et al. (1992) shows *R. spinosissima* as a casual alien garden escape in the Åland Islands, we have never observed spontaneous dispersal of this rose from gardens into more natural biotopes (cf. Hæggström & Hæggström 2010). Dånö is the first place, where we observed this rose growing outside a garden or former garden.

Senecio jacobaea – One flowering specimen grew in the central area of the waste ground. It has previously been found in seven of the sixteen municipalities in the Åland Islands between 1891 and 2014 (Hæggström & Hæggström 2010). The total number of localities is 13 or 14. Two of them were on ship ballast heaps, the rest on roadsides and meadows in inhabited areas. All of the finds seem to be more or less of ruderal and occasional nature (Kastikka 2014i).

One shrub of ***Salix viminalis*** grew in the northern part of the waste area. It is cultivated in southern Finland and rarely occurs as a garden escape (Hämet-Ahti et al. 1992). It has previously been found in at least three places as a ruderal or garden escape in the Åland Islands (Hæggström & Hæggström 2010).

Symphoricarpos albus* var. *laevigatus – Two separate shrubs grew together with *Rosa spinosissima* on the soil heaps on both sides of the road. This ornamental shrub occasionally occurs as a garden escape and it has been found earlier in the



Fig. 6. One specimen of *Senecio jacobaea* grew in the central part of the waste ground. Åland Islands, Geta, Dånö, July 31, 2014. Photo: Ralf Carlsson.

Åland Islands (Hämet-Ahti et al. 1992). We have also observed it in another locality at a roadside on Dånö about 300 m north of the waste ground.

Further, three common ornamental plants, *Digitalis purpurea*, *Malva moschata* and *Saponaria officinalis*, grew in the northern and central part of the waste area. They occur fairly frequently as garden escapes and ruderals in S Finland, including the Åland Islands (Hæggström & Hæggström 2010, Lampinen et al. 2014). One plant of potato (*Solanum tuberosum*) grew next to *Lactuca serriola*. It is occasionally found in waste grounds and other ruderal sites (Hæggström & Hæggström 2010).

Discussion

New vascular plants are continually introduced by the activities of man. Agriculture had its traditional weeds and occasionally new weeds are introduced with new crops, e.g. corn (*Zea mays*). The traffic is responsible for transporting new

plants to the Åland Islands. As an example, the sailing vessels brought with them numerous foreign plants with ship ballast during the latter part of the 19th and early part of the 20th centuries (Hæggström & Hæggström 2010). Car traffic is nowadays responsible for spreading plant species. *Senecio viscosus* was first found in Eckerö in 1951 and although its achenes are spread by wind, it mainly grows on roadsides and today it is found along almost every road of Åland. *Thlaspi caerulescens* is another species, which has spread along the roads during the last decades.

A few plant species, such as *Bromus erectus*, *Luzula luzuloides* and *Trisetum flavescens*, were introduced from Central Europe with lawn seed to the English style landscape park in Mariehamn during the latter part of the 19th century (Hæggström & Hæggström 2010). Gardening also adds to the introduction of new ruderals. Examples are *Impatiens glandulifera* and the bulbous vernal species *Crocus vernus*, *Muscari botryoides*, *Puschkinia scilloides* and *Scilla sibirica*. Road construction has added ruderal plants to the road verge flora during the last decades. Espe-

cially *Echium vulgare* has suddenly become quite common along many roads. Other rarer introductions include *Anthyllis vulneraria* subsp. *carpatica*, *Lotus corniculatus* var. *sativus*, *Onobrychis viciifolia*, *Rumex thyrsoiflorus*, *Sanguisorba minor* and *Verbascum speciosum* (Hæggström 2005a, 2005b, Hæggström & Hæggström 2008, 2010).

Occasionally, foreign ruderals may be introduced by some industry. Several exotic species, among them *Carex sylvatica*, *Cirsium oleraceum*, *Daucus carota* subsp. *carota*, *Oenothera rubricaulis*, *Ononis arvensis* and *Trifolium aureum*, were found at an abandoned wood chipping plant in Godby in 2002 (Hæggström et al. 2003).

The waste ground in Dånö shows a new way of introduction of plants into nature, i.e. with flower shop garbage. Many of the potted plants brought to the waste ground were tropical or subtropical species, such as the feather palm and the orchids, which died quite soon. Other species were capable of both flowering and fruiting, e.g. *Cucumis melo*, *Dipsacus fullonum* and *Lactuca serriola*. Of these, *L. serriola* has the greatest potential to survive. *C. melo* dies as soon as the temperature falls below zero. Of the other rare ruderals, *Bromus secalinus*, *Conyza canadensis* and *Lepidium densiflorum* subsp. *neglectum* are annuals and as they probably or certainly developed ripe viable seeds, they may prevail for some years on the waste ground. *C. canadensis*, as an anemochorous species, may spread to the roadside nearby – a typical site for this species in the Åland Islands.

Table 1. The vascular plant taxa found on the waste ground on the island of Dånö, municipality of Geta, Åland Islands. Observations were made on July 31, August 7, August 15 and October 16, 2014. The nomenclature is mainly according to the Field Flora of Finland (Hämét-Ahti et al. 1998, 2005). Taxa not included in that flora have the author's name abbreviation included in the list and the text. The coordinates for the locality are with 10 m accuracy 672008–672013:310263–7, according to the Uniform Coordinate System (UCS): Grid 27° E.

Achillea millefolium

Agrostis capillaris

A. gigantea

Alchemilla glaucescens

Allium oleraceum

A. sativum L. – one specimen of the *longicuspis* group

A. vineale

Alopecurus pratensis

Angelica sylvestris

Anthriscus sylvestris

Arabis hirsuta

Arenaria serpyllifolia

Artemisia vulgaris var. *vulgaris*

Atriplex patula

Betula pendula

B. pubescens

Bromus secalinus

Calamagrostis epigejos

Calluna vulgaris

Campanula rotundifolia

Cardamine sp. – young leaf rosettes

Carex canescens

C. leporina

C. pilulifera

C. spicata

Centaurea jacea

Chelidonium majus

Chenopodium album

Cirsium arvense var. *arvense*

C. vulgare

Conyza canadensis – one flowering and fruiting plant

Cucumis melo L. – one flowering and fruiting plant

Dactylis glomerata

Deschampsia flexuosa

Digitalis purpurea

Dipsacus fullonum L. – one flowering specimen

Dryopteris carthusiana

D. filix-mas

Epilobium adenocaulon

E. angustifolium

E. ciliatum

Equisetum arvense

Festuca arundinacea

F. ovina

F. rubra

Filipendula ulmaria

F. vulgaris

Fragaria vesca

Fraxinus excelsior

Galium palustre subsp. *palustre*

G. verum

Geranium pusillum

G. robertianum

Geum urbanum

Gnaphalium uliginosum

Hedera helix L. – one plant

Holcus lanatus – one tuft

Hypericum perforatum

Inula helenium – one leaf rosette

Juncus articulatus

J. conglomeratus

Juniperus communis

Lactuca serriola – one specimen

Lapsana communis

Lathyrus pratensis
Leontodon autumnalis
Lepidium densiflorum subsp. *neglectum*
Leucanthemum vulgare
Luzula pilosa
Malva moschata
Melica nutans
Medicago lupulina var. *lupulina*
Moehringia trinervia
Mycelis muralis
Myosotis arvensis
Origanum vulgare
Phalaris arundinacea
Phleum pratense subsp. *pratense*
Phragmites australis
Pilosella officinarum coll.
Pimpinella saxifraga
Pinus sylvestris
Plantago major subsp. *major*
Poa alpigena
P. angustifolia
P. nemoralis
P. pratensis
Polygonum aviculare
Populus tremula – a young specimen
Potentilla reptans
Prunella vulgaris
Pteridium aquilinum subsp. *latiusculum*
Ranunculus acris
R. repens
Ribes nigrum
R. rubrum coll.
R. uva-crispa
Rosa caesia
R. spinosissima – two separate shrubs
Rubus idaeus
Rumex acetosella subsp. *acetosella*
R. crispus
R. longifolius
Sagina procumbens
Salix caprea
S. viminalis
Saponaria officinalis
Scrophularia nodosa
Sedum acre
S. album
S. telephium subsp. *maximum*
Senecio jacobaea – one flowering specimen
S. sylvaticus
S. viscosus
S. vulgaris
Solanum tuberosum – one specimen
Sonchus asper var. *asper*
S. oleraceus var. *oleraceus*
Sorbus aucuparia
Stellaria graminea
S. media

Symphoricarpos albus var. *laevigatus* – two separate shrubs
Tanacetum vulgare
Taraxacum spp.
Trifolium fragiferum
T. repens
Tripleurospermum inodorum
Tussilago farfara
Urtica dioica
Vaccinium vitis-idaea
Verbascum thapsus
Veronica officinalis
V. scutellata
Vicia cracca
V. hirsuta
V. sepium subsp. *sepium*
V. tetrasperma

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