

## A new record of Arctic Bramble, *Rubus arcticus*, in the Åland Islands, SW Finland

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The Arctic Bramble, *Rubus arcticus* L., was found in Gottby in the municipality of Jomala, the Åland Islands, SW Finland, in June 2009. It was both flowering and fruiting, although rather sparingly. This boreal species has not been observed in the Åland Islands since 1950. The total distribution of the species is outlined. An account is given of the previous six observations of *R. arcticus* in Åland. The dispersal of the seeds (endocarps with seeds) of *R. arcticus* is treated.

### Introduction

The arctic bramble, *Rubus arcticus* L. is a northern species. Its area comprises most of the Eurasian taiga, from Scandinavia to the Far East (Hultén & Fries 1986). It also occurs in the northern parts of North America. Most of the plants in North America belong to subsp. *acaulis* (Michx.) Focke whereas the Eurasian subsp. *arcticus* occurs only in Alaska including the Aleutian Islands (Hultén & Fries 1986). In Scandinavia, *Rubus arcticus* has a northeastern distribution and it avoids areas with an oceanic climate. Consequently, it is rare in Norway with hardly any stations on the west coast (Hultén 1971, Elven 2005). It is rather common in northern Sweden with the southernmost stations in Östergötland (Hultén 1971, Genberg 1977), whereas it occurs in the whole of Finland with a

concentration in the central part of the country (Saastamoinen 1931, Hultén 1971, Lampinen & Lahti 2009). *Rubus arcticus* is, however, a very rare plant in the southwestern archipelago area of Finland including the Ålands Islands (Palmgren & Palmgren 1932, Eklund 1958). It has been found in about ten places in Estonia (Eichwald *et al.* 1962, Kurtto *et al.* 2010). It grew in a few localities in Latvia and Lithuania, but the species is probably extinct there (Hultén & Fries 1986, Kuusk *et al.* 1996). According to Flora Europaea (Tutin *et al.* 1968), *Rubus arcticus* is extinct in Britain.

### A new locality in Åland

During an excursion in the forests of Gottby, municipality of Jomala, on June 6, 2009, the author T.



Fig. 1. *Rubus arcticus* in flower. Ål, Jomala: Gottby, Myrarna, June 16, 2009. Photo: Ralf Carlsson.

S. found a stand of *Rubus arcticus*. There were a few flowering shoots (Fig. 1) growing along tractor wheel tracks crossing a small fen. This was the first observation of the species in Åland since 1950.

The authors C.-A. H. and E. H. visited the locality on June 13, and found that the species also grew along the forest road leading to the tractor wheel tracks and further towards a woody area with patches of spruce mire called Myrarna. There

were at least a hundred flowering and several hundred vegetative shoots along a 200-m-long stretch of the road (coordinates 66909-66910:30998-31000, according to the Finnish uniform grid system, Grid 27°E). The plants grew mainly at the edges of the road, the most vigorous plants with flowers occurring at the northern margin (Fig. 2). A few plants were collected at that occasion to be preserved in the herbarium of the Botanical Museum of the Finnish Museum of Natural History (H).

The forest road was built straight through the terrain and the vegetation of the locality was a mixed spruce and pine (*Picea abies*, *Pinus sylvestris*) forest. Patches of spruce mire were crossed by the road. The road is built of crushed rapakivi granite with some sand on the surface. The vegetation along the road mostly comprises weedy species, such as the coarse grass *Calamagrostis epigejos* and *Poa annua*. The authors R. C. and K. S. visited the locality on June 16, and then noted the following species:

*Calluna vulgaris*  
*Carex digitata*  
*Filipendula vulgaris*  
*Luzula pilosa*  
*Maianthemum bifolium*  
*Oxalis acetosella*  
*Potentilla erecta*

Fig. 2. The author R. C. standing on the forest road. The largest and best flowering and fruiting shoots of *Rubus arcticus* grows mainly along the northern road edge (to the left). Ål, Jomala: Gottby, Myrarna, July 21, 2009. Photo C.-A. Hæggström.



*Rhinanthus* sp.  
*Trientalis europaea*  
*Veronica officinalis*

Along the tractor wheel tracks, on wetter ground, *Carex viridula*, *Cirsium palustre*, *Daphne mezereum*, *Equisetum sylvaticum*, *Juncus conglomeratus*, *J. supinus*, *J. gerardii*, and *Molinia caerulea*, *Myrica gale* and *Pinguicula vulgaris* were found. Ditches run along the road on both sides; the ditch is deeper on the south side. The surrounding vegetation is mainly composed of a dense shrub of *Salix cinerea* and other *Salix* species and small birches (*Betula pendula*, *B. pubescens*).

On July 21, the authors C.-A. H. and R. C. visited the stand. A few ripe drupes with well developed drupelets (Fig. 3) and several with only one or a few developed drupelets were found.



Fig. 3. A ripe drupe with well developed drupelets of *Rubus arcticus*. Al, Jomala: Gottby, Myrarna, July 21, 2009. Photo C.-A. Hæggström.

### Old finds in Åland

When Saastamoinen (1931) wrote her comprehensive paper on *Rubus arcticus*, she did not know of any observation of the species in the Åland Islands. There is, however, a voucher specimen in H which, according to the label, was collected in Åland by A. Bomansson in 1863. The accuracy of this find has been doubted, because a more exact location was not given on the label (Hjelt 1915–19).

However, it is still quite possible that the voucher specimen was collected in Åland, because in the days of Bomansson the labels were often very brief. There are numerous similar brief labels attached to voucher specimens in H collected in the middle of the 19th century.

The next find was from Lemland, Prästgården, where, according to A. Sternberg, it grew on the western side of the vicarage (668195:311666; coordinates estimated by us) in 1886 (Palmgren & Palmgren 1932). No voucher specimen is preserved.

*Rubus arcticus* was found on two separate stations in the northeastern municipality of Kumlinge. The first one was in the island of Seglinge where it grew in a fen meadow north of Käringträsk (probably 6694-5:149–151), and voucher specimens were collected on July 8, 1931 by M. & A. Palmgren (H) (Palmgren & Palmgren 1932,

Eklund 1958). The second was in the island of Korsö belonging to the village of Björkö (670427:316540). It was found by E. Huldén in 1932 (Palmgren & Palmgren 1932) and O. Eklund July 12, 1933 (Eklund 1958).

The next observation came from westernmost Åland: Eckerö, Kyrkoby. *Rubus arcticus* grew in a moist, lax wood with birch, pine and black alder (*Betula* sp., *Pinus sylvestris*, *Alnus glutinosa*) E of the small lake Lillfladan (670373:309071; H. Luther, June 26, 1939 (H); a collection was then made also by L. Fagerström (H) (Luther 1940).

The last observation in the 20th century was made in Saltvik, Långbergsöda by C. Cedercreutz on 28 August, 1949 (H). *Rubus arcticus* grew in a moist forest along the road E of Orrdalsklint (67101:31209); Cedercreutz (1951) observed it also on 3 July, 1950 when it was flowering very abundantly.

### Discussion

Some boreal plant species that are rather common in the northern part of the hemiboreal zone seem to be very rare or absent in the Åland Islands (cf. Hæggström & Hæggström 2008). They are usually plants of moist woods and mires. In addition to *Rubus arcticus*, the following may be mentioned: *Carex aquatilis* – rare in the Åland Islands; rare in

- the northern part of the hemiboreal zone  
*C. chordorrhiza* – rare in the Åland Islands; occurs in the whole hemiboreal zone  
*C. globularis* – very rare in the Åland Islands; rare in the southern part of the hemiboreal zone  
*C. loliacea* – very rare in the Åland Islands; rare in the southern part of the hemiboreal zone  
*C. pauciflora* – rare in the Åland Islands; occurs in the whole hemiboreal zone  
*Vaccinium microcarpum* – very rare in the Åland Islands; rare in the southern part of the hemiboreal zone  
*Betula nana* – not found in the Åland Islands; occurs in the whole hemiboreal zone  
*Juncus stygius* – not found in the Åland Islands; rare in the southern part of the hemiboreal zone  
*Salix lapponum* – not found in the Åland Islands; rare in the northern part of the hemiboreal zone

The reason for the rarity or absence of these species in Åland has not been explained satisfactorily. The vast waters between Sweden and Åland on one hand, and the rocky islands with few suitable habitats in the Finnish archipelago on the other may be explanations. Many of them seem, however, to have a good capacity of dispersal.

*Rubus arcticus* has disappeared in some of its southernmost localities, e.g. in Latvia, Lithuania, England (Hultén & Fries 1986) and Sweden (Rydberg & Wanntorp 2001). This may be the result of climate warming, but habitat deterioration may, however, be the main reason.

*Rubus arcticus* was formerly favoured in Finland due to the small scale clearing of woods for arable fields and hay meadows, and ditching and mowing of fen meadows. However, during the latter part of the 20th century, the species has become much rarer and it has even disappeared in some areas, because of habitat deterioration due to large scale draining of mires, reforestation of small arable fields, intensive forestry and ploughing of forest soil for regeneration of trees. According to Lampinen & Lahti (2009), there are several areas in Finland where most of the observations in the 100 km<sup>2</sup> grids were made before 1990: a narrow belt along the south coast to the Åland Islands, most of the biogeographical province of St, the south parts of the provinces Tb and Sb and in northern Finland large areas of the provinces Obu, Ks and Lks.

Although *Rubus arcticus* is flowering well, it seems to bear fruit rarely and irregularly in southwestern Finland and when fruiting, there are often only a few developed drupes (Saastamoinen 1931, Palmgren & Palmgren 1932, Åberg 1933, Eklund 1936, Auer 1944, Cedercreutz 1951). However, occasionally fruiting may be rich, as it was in Ab, Pargas, Lillmälö in 1935 (Nordman 1937).

The drupes of *Rubus arcticus* are suited for endozoochorous dispersal, mainly by birds. However, very few observations of birds as vectors for dispersal of the species are known. Hesselman (1897) mentions *Rubus arcticus* seeds (endocarps with seeds) found in the gut of the mallard (*Anas platyrhynchos*). Heintze (1916) reports undoubted dispersal by fieldfares and waxwings (*Turdus pilaris*, *Bombycilla garrulus*). Further, Heintze (1918) suggests that magpies, crows, ravens and siberian jays (*Pica pica*, *Corvus corone*, *C. corax*, *Perisoreus infaustus*) probably disperse the seeds. Heintze (1915) mentions that the drupes are eaten by bears. Saastamoinen (1931) mentions a few mammals, cows, horses, reindeer and even man, as possible dispersers of seeds of *R. arcticus*. The roe deer, introduced in the 1950s, may also be a possible dispersal agent, as it is now very common in the Åland Islands.

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