Petrosedum rupestre subsp. *erectum*

Ray Stephenson discusses this very rare relict taxon.

Petrosedum rupestre is very variable – so much so that Linnaeus described it twice – as both *Sedum rupestre* and *S. reflexum*. Fröderström even considered *S. rupestre* and *S. forsterianum* to be one and the same species (though he accepted subspecific status). Chromosome numbers of $2n$ = 56, 64, 85, 88, 96, 102, **112**, 102-119, 140, 153, and 168 exist for *Petrosedum rupestre* subsp. *rupestre*. Linnaeus described it as being a species of NW Europe. *Petrosedum rupestre* subsp. *erectum* is reported by 't Hart (as late as 1992) as being just from the type locality near Trieste in Italy but also he noted that it occurs in adjacent Slovenia.

't Hart's experiments showed artificial crosses of *Petrosedum forsterianum* and *P. rupestre* subsp. *erectum* to be a good match both phytotaxonomically and cytologically for *P. rupestre* subsp. *rupestre*. Although hybrids produced in cultivation were semi-sterile with $2n$ = 64, he was convinced that backcrossing could explain the common $2n$ = 112 and 88, the latter being fertile and flowering abundantly.

't Hart's conclusion:

P. forsterianum × *P. rupestre* subsp. *erectum* was the founding event for *P. rupestre* subsp. *rupestre*.

A probable scenario mooted by 't Hart suggests (see Figures 7 and 8) that as the climate cooled at the onset of the last Great Ice Age, *Petrosedum forsterianum* migrated south. This species is a denizen of damp, shady banks and is fairly hardy. *Petrosedum rupestre* subsp. *erectum* on the other hand is not particularly hardy in a cool temperate area and appears to favour karst. It can be envisaged that with *P. forsterianum* migrating south and with *P. rupestre* subsp. *erectum* having little prospect of moving to warmer climes, that the once geographically separate species eventually became sympatric. 't Hart has shown that the species and their hybrid offspring are capable of successful breeding. Perhaps this interchange of genes took place about 20 000 years ago. With the retreating of the ice sheets,

P. forsterianum would move to cooler climes, leaving behind *P. rupestre* subsp. *erectum* probably highly depleted by this time and a relict

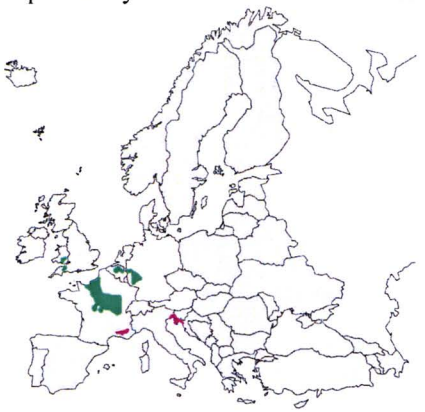

Figure 7. Green = possible habitat of *Petrosedum forsterianum*, Pink = possible habitat of *P. rupestre* subsp. *erectum* (both) before the onset of the last Ice Age.

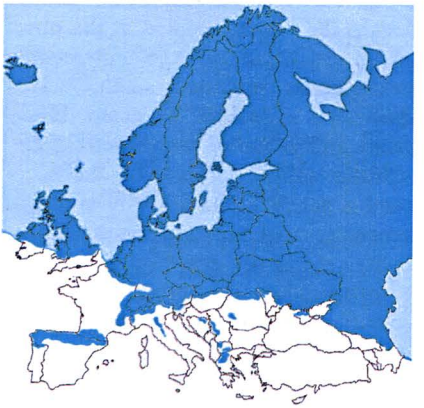

Figure 8 Possible extent of Ice Sheets during the peak of the last Ice Age in Europe

of a few restricted sites. The big difference would be that the new hybrid of the two: *P. rupestre* subsp. *rupestre*, being far more tolerant than either parent, and with hybrid vigour, would not only follow the glaciers north but would also move into mainland Italy and even beyond to Sicily and become a more successful and more widespread taxon than either parent, especially in N Europe – though it would be unable to penetrate the Iberian peninsula due to the Pyrenees.

It is thought that *Petrosedum forsterianum* moved through low Pyrenean passes during the onslaught of the Ice Age and is today relatively common in Portugal and W Spain. The present day distributions of *P. forsterianum* and *P. rupestre* subsp. *rupestre* overlap considerably, but the latter can withstand more continental temperatures and is found as far E as Central Poland and N into the Swedish Baltic area.

There has always been much confusion over the identity of the relict taxon *Petrosedum rupestre* subsp. *erectum*, after all, it wasn't until 1978 that 't Hart recognised it. With the eye it is impossible to differentiate between plants of *P. rupestre*, *P. montanum* or *P. ochroleucum* when not in flower. Even when in flower, it is very difficult to differentiate *P. rupestre* subsp. *erectum*, from *P. montanum*. 't Hart (1978) keys the differences as follows:

P. montanum — sepals and bracts with glandular hairs.
P. rupestre subsp. *erectum* — glabrous sepals and bracts.

Both have upright facing inflorescences and yellow flowers – two very good characteristics separating them from

close relatives, but these most obvious diagnostic features are shared.

In my collection I place newly acquired *Petrosedum* with other members of the same taxa and regularly realise, when they first flower, they have been misidentified. *Petrosedum rupestre* subsp. *erectum* is the weakest and least hardy member of this genus for me with inflorescences very rarely appearing. When any plant flowers for the first time and I realise that my initial suggestion of identification is incorrect, I place an extra label in the pot, reminding me that when I update my records (usually in the winter) an error was made with the preliminary identification.

Five years ago I received a little unidentified cutting from Pauline Topham collected from a coastal cliff near Omišalj, Krk, a Dalmatian isle. I placed the plant with *Petrosedum ochroleucum*, a common Balkan species. I remember thinking that this was an extremely low altitude for such a species but thought no more of it. The plant flowered yellow in 2009 and I added a label "*P. montanum*?" until I could check my notes. The winter of 2009-10 was exceptionally harsh and by the time I realised that this plant had to be *P. rupestre* subsp. *erectum*, and not *P. montanum*, it was no longer alive!

Figure 9. T = type locality of *Petrosedum rupestre* subsp. *erectum*, S of Auresina, Italy. K = N of Omišalj on the island of Krk. I = the peninsula of Istria.

't Hart knew of *Petrosedum rupestre* subsp. *erectum* sites only at the type locality and neighbouring Slovenia (and later also in the French Alps Maritime). If *P. rupestre* subsp. *erectum* does grow on Krk and along the Italian and Slovenian karst coastlines, there is a very good chance it also grows in Istria. This was the main purpose of our trip there in September-October 2010. I will report our findings in a future *Newsletter*.

REFERENCES

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