

The Pioneer Species of Vascular Plants in Surtsey,
Cakile Edentula

by

Sturla Fridriksson
University Research Institute, Reykjavik

The first species of higher plants to colonize the new volcanic island of Surtsey was discovered on June 3rd 1965.

Small seedlings of Cakile edentula were found growing upon the sandy beach north of the small lagoon on the island. On June 8th an expedition discovered some 20 additional seedlings of the same species growing approximately 50 m east of the previous location.

The plants were all growing in a mixture of tephra and decaying seaweed (Ascophyllum nodosum), which evidently formed a suitable medium for the germination and growth of the young plants.

The plants had grown from seed that apparently had been washed ashore, possibly along with the seaweed, which might act as a float, aiding dispersal of seed by ocean.

The seedlings of the pioneer colonists, however, did not mature, but succumbed a few weeks later under a shower of ashes carried from the volcanic crater of Syrtlingur located NE of Surtsey. The fall of fresh tephra from this satellite volcano thus delayed the colonization of higher plants on Surtsey. (Fridriksson 1965 a, 1965 b).

It was not surprising to find Cakile as the first species of vascular plants to grow in Surtsey, and thus becoming a pioneer plant in the possible future succession of the coastal region of the island. Seed of Cakile had previously been found drifted ashore in Surtsey but when tested it did not show any sign of germination (Fridriksson 1964). It was however, assumed that the seed would not be greatly affected by the salinity of the sea, as Cakile is a

coastal species having seed with a thick cork capsule, which protects it and keeps it floating for a considerable length of time.

It had even been suggested by Löve and Löve (1947, 1956) that Cakile was one of those species found in Iceland which could have been carried by ocean currents to the country from the coast of America. This assumption was based on the authors' cytological studies, which indicated that the European Cakile (sp. maritima) is diploid compared to the tetraploid (sp. edentula) of America, the Azor Islands and Iceland.

The discovery of the pioneer plant in Surtsey shows that living Cakile seed is being dispersed over such distances as between Surtsey and some Cakile colony, the nearest being on an island 20 km away. A test of the viability of Cakile seed after immersion in sea water furthermore supports the possibility of dispersal of such living seed over still greater distances. (See Fridriksson, this report).

BIBLIOGRAPHY

- Fridriksson, Sturla (1964): The colonization of the dryland biota on the Island of Surtsey off the coast of Iceland. Náttúrufræðingurinn Vol. 34, p. 83-89.
- Fridriksson, Sturla (1965 a): Biological records on Surtsey. The Surtsey Biology Conference, Proceedings, p. 22-24.
- Fridriksson, Sturla (1965 b): The first species of higher plants in Surtsey the new volcanic island. Náttúrufræðingurinn, Vol. 35, p. 67-102.
- Löve, Áskell and Doris (1947): Studies on the origin of the Icelandic flora. Rit Landbúnaðardeildar B-flokkur nr. 2, p. 29.
- Löve, Áskell and Doris (1956): Cytotaxonomical conspectur of the Icelandic flora. Acta Horti Gotoburgensis 20, p. 176-178.