

BIOLOGICAL RECORDS ON SURTSEY

by

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The recording of the colonization of the dryland biota on the island of Surtsey has been performed at approximately monthly intervals, since it was foreseen, in the spring of 1964, that the island would survive the destructive forces of the sea.

The study was considered of value in order to furnish information on the successive order in which living organisms colonize a virgin island in the North-Atlantic, as well as it was believed to throw light on the spreading potential of various life forms and their means of transport over an ocean body.

Living organisms can either reach the island by their own mobility or can be supported by other agents. Undoubtedly man will play his part as a carrier, but steps are being taken in restricting unnecessary visits of people to the island.

Birds invade the island on their own wing support and so do possibly also some of the flying insects.

The dispersal of other living forms are by birds, by air and by ocean currents.

The immigration to the island will most likely take place from the neighbouring islands and the mainland of Iceland. The dryland closest to Surtsey is a rock at a distance of 5.5 km, where a few species of higher plants are to be found.

At the distance of 20 km is the largest among the Vestmann Islands with a flourishing fauna and flora. The distance from Surtsey to the mainland extends to over 30 km.

The various members of the Vestmann Islands differ in

number of plant species and similarly the islands differ in that respect from the mainland.

The variation in distribution of plant species enables the determination of the possible minimal distance a given species has travelled, in order to reach the new island. This may give valuable information as to the different spreading potentiality of various plants. Although the immigrating biota is most likely to derive from Iceland, there is still the possibility of a long distance dispersal from other European countries.

Surtsey is by now the southernmost part of Iceland, and it is quite possible that the migrating birds from the continent of Europe may land on the island, after the flight across the ocean. On Surtsey it might be possible to detect whether these birds do carry plants and lower animals, and thus to what extent birds take part in the transport of the biota across the Atlantic Ocean.

The air currents carry bacteria, spores, light seeds and insects and by a study of air currents in the Atlantic it may be possible to trace the most likely route of dispersal.

Various floating objects drift ashore carried by ocean currents.

Among the debris are found plant parts and a few lower animals that sometimes have been carried attached to floats or drift wood.

Although the distance between the island of Surtsey and the nearest islands is short compared to the distance between Iceland and the continent of Europe, the study of the colonization of the new island may give some indication as to the way the biota does disperse in the North Atlantic and it may explain some facts regarding the dispersal of plants to Iceland in post-glacial time.

Previously, records have been kept on some biological events taking place on the island. The first records have been published (S. Fridriksson, Náttúrufræðingurinn 1964). Further

data have been collected and other problems are under study.

Undoubtedly, microbes and airborne spores were the first to land on the surface of the volcanic island, which must have been completely devoid of life after the constant shower of hot falling tephra.

When the first attempt was made to estimate the number and kinds of microbes at two different sites on the island as well as in the lagoon, formed on the north east coast, it was noted that the microbial flora was extremely sparse and scanty in strains.

Fungi were sought at sea level and further up, and found to be rather rare, especially at the higher levels.

Algae and various forms of plankton may have been washed upon the shores of the newborn island at an early date as quite a few forms of these were collected when the first investigation was made on May 14th, 1964.

There have as yet been no signs of mosses or lichens, and no vascular plants have so far grown on the island. Various living plant parts, however, are constantly being washed ashore and germinable seed have been found. These plant parts have been mostly of coastal species found growing on the neighbouring islands, such as sea rockets, lyme grass, bistort, wild chamomile, roseroot and angelica.

These various plant parts have been collected and a study made of their vividness after their apparent immersion in salt water. In comparison fresh plant parts and seed have been immersed in salt water for different length of time and their vividness and germination ability measured following such treatment.

Surface samples of tephra from different sites have been collected for a possible study of its content of lower organisms and their part played in formation of soil.

The occurrence of two flying insects has been recorded and a note made of the presence of various birds and seals that have been found visiting the island.