

# Marine Benthic Algae Recorded in Surtsey During the Field Seasons of 1969 and 1970

By

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Investigations on the marine algal colonization of Surtsey were conducted in 1969 and 1970 in the same way as the year before (1). Sampling, carried out during the summer season (july—august), was again centered on the rocky shore bordering the lava cliffs as well as offshore in the sublittoral zone, down to the lower limit of macroscopic algae, situated at about 20 m depth. Underwater collections were made by SCUBA diving.

## COMPOSITION OF THE MARINE ALGAL FLORA

An analysis of the material collected led to the identification of species listed below. Diatoms species are excluded. The nomenclature adopted is that proposed by Parke and Dixon (2).

It appears that 24 algal species were found growing around Surtsey in 1969 and 25 species in 1970. To this must be added many species of benthic Diatoms, the most common of which was *Navicula ramosissima*, already settled at Surtsey.

## ON THE MARINE ALGAL SETTLEMENT

Among the species identified during the present survey only a few are new invaders in the marine environment of Surtsey.

In the littoral zone the only new elements were marine myxophyceae, found in 1970, in high lying rock pools on the NE coast. The remaining species identified in the littoral zone had already colonized the island (1). These species appear thus to be a rather constant elements of the littoral flora — at least in its present stage of development.

Species	Littoral		Sublittoral	
	1969	1970	1969	1970
<i>MYXOPHYCEAE:</i> .....	..	×	..	..
<i>CHLORPHYCEAE:</i> .....	..	..	..	..
<i>Ulothrix flacca</i> .....	×	×	..	..
— <i>pseudoflacca</i> .....	×	×	..	..
— <i>consociata</i> .....	×	×	..	..
<i>Urospora penicilliformis</i> .....	×	×	..	..
— <i>wormskioldii</i> .....	..	..	×	..
<i>Codiolum gregarium</i> .....	×	×	..	..
<i>Acrosiphonia albescens</i> .....	×	..	..	..
<i>Enteromorpha prolifera</i> .....	×	×	..	..
— <i>compressa</i> .....	×	×	..	..
<i>Ulva lactuca</i> .....	..	..	..	×
<i>PHEOPHYCEAE:</i> .....	..	..	..	..
<i>Ectocarpus confervoides</i> .....	×	×	×	×
<i>Giffordia hincksiae</i> .....	..	..	×	×
— <i>granulosa</i> .....	..	..	×	..
<i>Petalonia fascia</i> .....	×	×	..	..
— <i>zosterifolia</i> .....	×	×	..	..
<i>Scytosiphon lomentarius</i> .....	..	..	×	..
<i>Desmarestia viridis</i> .....	..	..	×	×
— <i>ligulata</i> .....	..	..	×	×
<i>Laminaria hyperborea</i> .....	..	..	×	×
— <i>digitata</i> .....	..	..	..	×
<i>Alaria esculenta</i> .....	..	..	×	×
<i>RHODOPHYCEAE:</i> .....	..	..	..	..
<i>Porphyra umbilicalis</i> .....	×	×	..	..
— <i>miniata</i> .....	..	..	×	×
<i>Euthora cristata</i> .....	..	..	..	×
<i>Lomentaria orcadensis</i> .....	..	..	..	×
<i>Antithamnion floccosum</i> .....	..	..	×	×
<i>Phycodrys rubens</i> .....	..	..	×	×
<i>Polysiphonia urceolata</i> .....	..	..	×	×
Total number of species .....	12	12	13	14
×=present				

In the sublittoral zone the settlement was progressing somewhat faster as 4 new colonizing species were encountered, namely: *Ulva lactuca*, *Euthora cristata*, *Laminaria digitata* and *Giffordia granulosa*, the last mentioned being a new record for Iceland. Some species, such as *Desmarestia aculeata* and *Monostroma grevillei*, already settled in 1968, were not found again. Some variations in the composition of the deep water flora could also be noted. Species, such as *Urospora wormskioldii*, *Scytosiphon lomentarius* and the newly recorded *Giffordia granulosa*, present in 1969, were not rediscovered in 1970.

The new colonizers were represented by isolated individuals. They did not affect the general aspect of the marine algal vegetation. As previously (1,3) two major belts formed the littoral zone, an upper one of *Urospora penicilliformis*, and a lower one of *Navicula ramosissima*, locally strewn with pure stands of *Petalonia fascia* and *Petalonia zosterifolia*. *Enteromorpha prolifera* populations were found to be spreading out in selected places, mainly on exposed vertical rocks. The sublittoral growth was, as previously, essentially dominated by *Alaria esculenta* populations.

It was formerly pointed out (3) that the marine benthic algal colonization is a long term process in Surtsey's water and the algal vegetation is far from having reached the stage of development observed in neighbouring floral areas. The main obstacle actually met with by the settlers is obviously the instability of the substrate. The marine erosion is as yet quite intensive everywhere along the heavy exposed coast of the island (4). Thus, the basalt cliffs are known to have locally retreated by about 100 m in one year. It is evident that the settlement and the development of the marine benthic populations are particularly difficult under such conditions.

#### References:

- (1) Jónsson, S. 1970: Studies of the colonization of marine benthic algae at Surtsey in 1968. Surtsey Res. Progr. Report V, p. 42–51.
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- (4) Moign, Y. et Moign, A. 1970. Les îles Heimacy et Surtsey de l'archipel volcanique Vestmannaeyjar (Islande). Etude du littoral. Norois, 67, 305–334.