

Sea Lettuce

Green sea lettuce (*Ulva*) is a type of seaweed found along all but the most wave exposed coastlines around the world, from tropical to polar climates. It is able to grow very rapidly given the right conditions. When this happens 'green tides' occur, as seen in St Aubin's Bay.

What causes 'green tides'?

There are various factors which affect the growth of sea lettuce in the Bay:

- Light
- Temperature
- Nutrients
- Grazing by small marine animals

Competition with other seaweeds
Conditions are most favourable for growth when there is more light (ie not in the winter), sea temperatures are 15-20C (although this varies with species) and there is a favourable level of nutrients in the water, particularly nitrogen. Sea lettuce grows in such a way that it is especially responsive to nutrients and this can lead to rapid growth which results in 'green tides'.

Where are the nutrients coming from?

The water in St Aubin's Bay receives nutrients from the following sources:

- Water brought into the Bay by the tide from further out to sea (most of the nutrients found in the Bay)
- Streams - draining into the Bay, transporting nutrients from agricultural land

Bellozanne Sewage Treatment Works (STW) - treated effluent discharges

Offshore sources and the STW are likely to be relatively constant inputs to the Bay, and as the 'green tides' are intermittent they cannot be the sole cause of sea lettuce.

Why does it come some years and not others?

Our current data indicates that, in most years, there is not enough nitrogen in St Aubin's Bay to support prolific growth of sea lettuce after mid spring. Therefore if sea temperatures are higher than usual in early spring and this coincides with the higher nutrient levels then this can contribute

to prolific growth.

Is it a problem elsewhere?

Green tides are an increasing problem in many areas of the world, including Ireland, Kent, France, Portugal and Italy, commonly in bays with a physical resemblance to St Aubin's Bay in terms of tidal movement and adjacent land use.

What can we do about it?

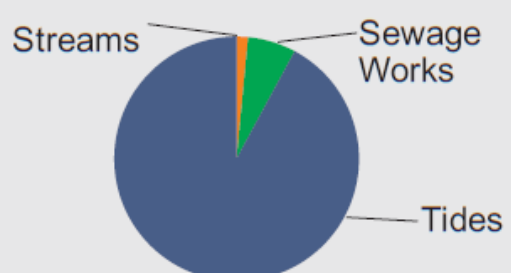
Despite significant resources being allocated to investigating the problem, particularly in France, the most common response in other countries is to simply clear the sea lettuce from beaches and dispose of it elsewhere, with the most efficient strategy suggested to be removal early in the bloom cycle. This is consistent with the Jersey response, except we move it to the low tide mark for it to go out with the tidal flow. The fact that there is no reliability as to whether there will be significant amounts of sea lettuce on a regular basis means creating a marketable use for it is difficult.

What will happen in the future?

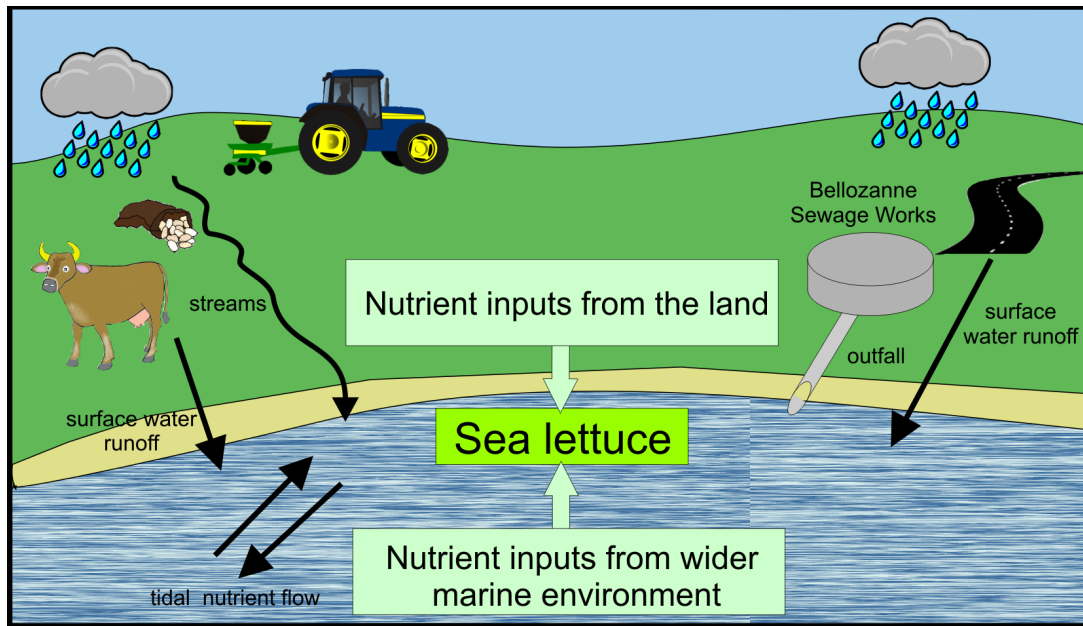
The impact of climate change will likely increase water temperature which means 'green tides' may become more frequent. More research would be required to better understand the conditions in St Aubin's Bay and enable a long term nutrient control strategy.

Information source: St Aubin's Bay Sea Lettuce Literature Review, October 2013 compiled by Cascade on behalf of the Department of the Environment

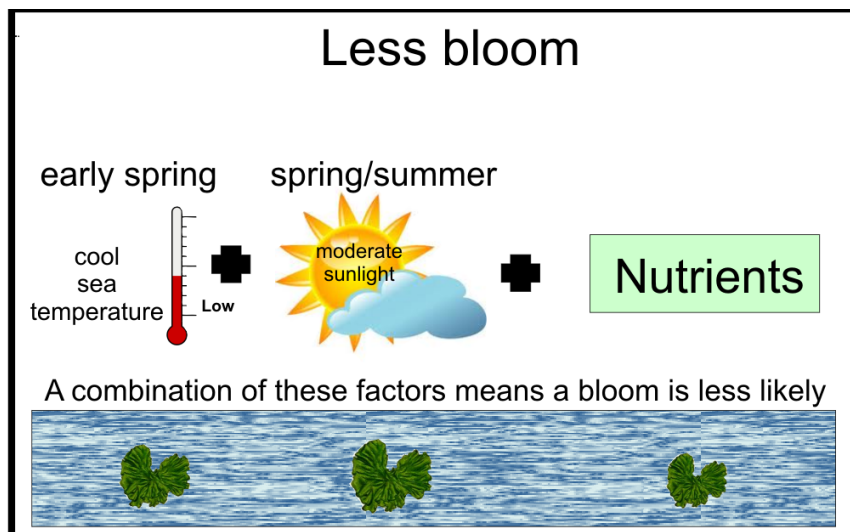
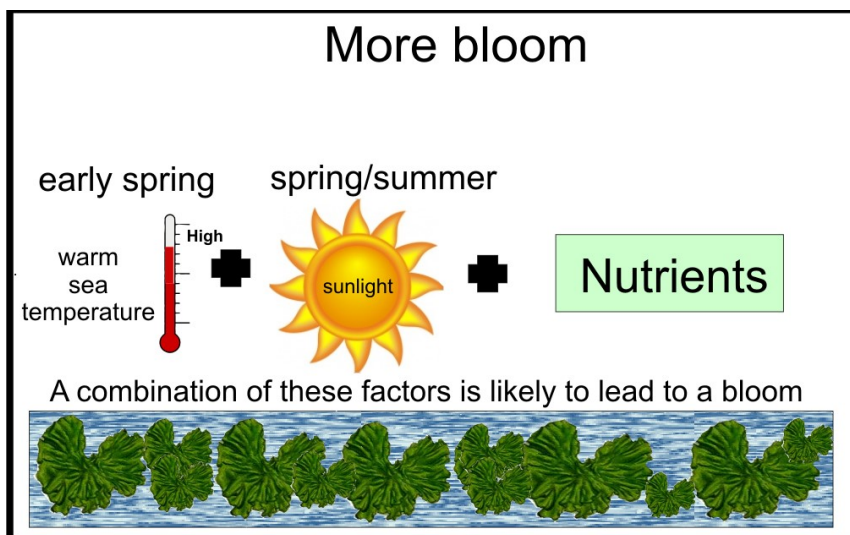
Where do the nutrients in St Aubin's Bay come from?



Where are the nutrients in St Aubin's Bay coming from?



What factors affect sea lettuce bloom?



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