

Sargassum muticum at the west and south coast of Ireland: an invasive Seaweed species on the move?



KRAAN, S. Irish Seaweed Centre,
Martin Ryan Institute, National University of Ireland, Galway.

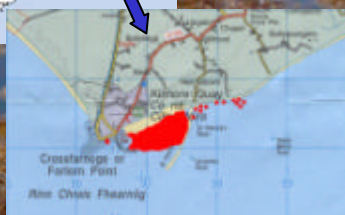
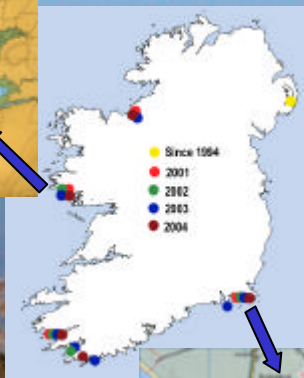
METHODS

The areas where *Sargassum muticum* was recordered previously were surveyed in this study including any neighbouring areas. Furthermore, bays and inlets in close proximity of the original survey area were also examined. The extent of the population and spreading ratio was measured where *Sargassum muticum* was encountered. Detailed maps with distribution, spreading and extend of the beds are produced from the survey records.

Surveying took place in three different ways:

- 1) By foot in the lower intertidal zone at LW, and along drift line at HW.
- 2) By kayak at various stages of the tide spanning intertidal to subtidal
- 3) By snorkelling at various stages of the tide spanning intertidal to subtidal

Names of surveyors, dates and places were recorded together with a site description and other general information like bottom substrata and marine flora. Drift plants of *S. muticum* were noted and attached plants were recorded using a GPS (Magellan, Meridian Marine) together with Map Send BlueNav Charts and software (version 4.0). The site and *S. muticum* plants (drift and attached) were photographed using a digital camera. Several plants were measured for length and weight where large beds were established, using a tape measure and a hanging balance, respectively. A quadrat was used to determine the number of plants per m². With the average wet weight per plant and number of plants per m², a standing stock for a given area could be calculated.



RESULTS

This study showed that *Sargassum muticum* most probably arrived in the mid nineties and is spreading along the coast of Ireland. Spreading rates are difficult to calculate due to the nature of the introduction and late discovery in Ireland, nevertheless, with some uncertainty, a rate of spreading of 2.3 km year⁻¹ has been calculated for two bays. Furthermore, this study showed that *S. muticum* has been found growing in Seagrass beds and in rock pools, which might have serious consequences for the biodiversity in rock pools and protective status of seagrass habitats. *Sargassum muticum* was often found in conjunction with mooring areas, anchorage sites and pontoons, all indicating that introduction is most probably by yacht or boating. This shows that the most likely vector for distribution in Irish waters is by boat and not aquaculture. It is possible that yachts arriving from colonised areas in UK and France may be responsible for transporting this species to Irish shores by carrying *S. muticum* on their hull, rudder or anchor chain.

The *S. muticum* bed at Kilmore Quay consists of a high density of *S. muticum* plants with 3 plants per m² on average. The total surface area of the bed is 234,600 m² containing approximately 700,000 plants. The standing stock of the Kilmore Quay *S. muticum* bed was calculated during its peak in growth and was estimated to be 487.5 tonnes wet weight on average with a minimum of 136.9 tonnes and a maximum of 838.1 tonnes. This large, well-established population indicates that it has probably been present since the late 1990's and most probably has acted as the source for further distribution around the Irish West coast via Yachting.

CONCERNS

Of some concern may be the establishment of *S. muticum* in seagrass beds in Kilmore Quay. Similar results have been found in seagrass beds in the Isles of Scilly (Raines *et al.* 1992). Seagrass beds are protected as part of a specific habitat under the Habitats Directive 1992. Moreover, seagrass beds are often part of habitat that occurs in a number of areas proposed as SACs under the EC Habitats Directive.

Recent initiatives arising from the EU Habitats Directive and the Convention on Biological Diversity have led to seagrass habitats being specifically targeted for conservation and restoration (Wynne *et al.*, 1995).

In the UK introduction of, and competition from, alien species such as *Spartina anglica* and *Sargassum muticum* are current factors affecting the habitat.



Seagrass bed at Kilmore Quay with *S. muticum* growing in between.

RECOMMENDATIONS

It is recommended that surveying of the spread of *S. muticum* should continue in order to observe the effects on local flora and fauna and possible effects on aquaculture, the Seaweed Industry and Tourism. Moreover, a detailed study of the effects of *S. muticum* on rock pool communities and seagrass beds should be initiated.



Rockpool at Dunmanus Bay with *Sargassum muticum* as the dominant species



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Literature
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