The Invasive Seaweed Sargassum muticum (Yendo) Fensholt in Lough Hyne Marine Nature Reserve, Co Cork

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Botanical Notes

The invasive seaweed Sargassum muticum (Yendo) Fensholt in Lough Hyne Marine Nature Reserve, Co Cork


On 8 July 2003, six attached specimens of S. muticum were found on the eastern shore of the south basin in Lough Hyne Marine Nature Reserve (51°30.07’N 09°17.74’W). The six plants were discovered while snorkelling along the boulder scree just south of the ‘Whirlpool’ cliff area. All were attached to the boulder and cobble substrate from 0m to 3m in depth. The plants ranged in size with the smallest having a frond length of approximately 40cm and the largest approximately 1.5m. All six specimens were located within a 6m radius. A sample was collected and brought back to Cork for verification by Dr Padraig Whelan of the Department of Zoology, Ecology and Plant Science, University College Cork.

Once the specimen of S. muticum had been verified, the District Conservation Officer for the National Parks and Wildlife Service, Declan O’Donnell, was contacted. It was decided that an attempt should be made to remove the attached S. muticum plants. On 15 July 2003, an extensive search of the ‘Whirlpool’ cliff area was undertaken using SCUBA. Overall 40 plants were found in water depth ranging from 0-6m and removed. The plants ranged in length from 30cm to 5.5m.

Due to Lough Hyne’s Marine Reserve status, there are strict regulations, which prohibit the movement of flora and fauna into or out of the Reserve area. Therefore it is unlikely that S. muticum was introduced with the commercially important oyster Crassostrea gigas (Thunberg). A more likely mode of introduction into the reserve is through the narrow channel referred to as the ‘rapids’, which provides a constant exchange of water between Lough Hyne and the outside Atlantic Ocean. It is difficult to know whether S. muticum was transported into the area as fouling on a small recreational or fishing boat or if it arrived as drift from an outside population. The nearest known locality of a S. muticum population is Dunmanus Bay, Co Cork, which is located approximately 90km (along the coast) away from the reserve. S. muticum is known to spread by long distance dispersal and in some cases populations have developed as far as 280km away from the nearest seed population (Deysher, L. & Norton, T. A. 1982 Journal of Experimental Marine Biology and Ecology 56: 179-195). Because S. muticum is self-fertilizing, only a small fertile fragment would be necessary to create an established population (Deysher, L. & Norton, T. A. 1982 op. cit., Critchley, A. T. et al. 1983 Journal of the Marine Biological Association, U. K. 63: 799-811).

The floral and faunal diversity within Lough Hyne has been well documented (Wilson 1984 op. cit., Costello, M. J. & Holmes, M. C. 1991 In Myers, A. A. et al. (eds) The ecology of
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Lough Hyne 1: 171-175. Royal Irish Academy, Dublin) and every year a number of students and professional researchers partake in studies throughout the Lough. Throughout 2003 over 350 recreational SCUBA dives and 100 scientific dives were undertaken within its boundaries (Declan O'Donnell pers. comm.). It is therefore reasonable to assume that if S. muticum had been present within the reserve for an extended period of time, it would have been discovered. However, the largest (and possibly the oldest) plant found by Declan O'Donnell was 5.5m in length. Nicholson et al. (1981 In Fogg, G. E. & Jones, E. (eds) Proceedings of the 8th International Seaweed Symposium 1: 416-424. The Marine Science Laboratories, Menai Bridge) found that, in California, S. muticum can grow up to 4cm per day (Rueness, J. 1989 Marine Pollution Bulletin 20: 173-175.), which would infer that the 5.5m plant could be approximately 138 days old. However if a more modest growth estimate is used, such as 4mm per day (Norton, T. A. 1977 Journal of Experimental Marine Biology and Ecology 26: 41-53.), then the plant may have been growing for nearly four years.

If S. muticum was to become established within Lough Hyne it could potentially alter the biodiversity of species present. Its high fecundity and fast growth rate allow S. muticum to quickly accumulate a large biomass, thus helping it to out-compete native species for space and light (Viejo, R. M. 1997 Journal of the Marine Biological Association, U. K. 77: 325-340, Staeher, P. A. et al. 2000 Marine Ecology Progress Series 207: 79-88). It is therefore imperative that the growth and development of S. muticum within the Lough be monitored. There are preparations underway to develop a five-year plan for the removal of S. muticum from within the reserve boundaries (Declan O'Donnell pers. comm.).

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Zoological Notes

Physella gyrina (Say) (Mollusca: Gastropoda) in the Quoile Pondage, Co Down

On 10 July 2004 I found a large number of bladder snails crawling in shallow margins, or out of water on stranded duckweed, by the R. Quoile at New Bridge (J492457). Their large size and the nature of the habitat immediately suggested the North American bladder snail Physella gyrina (Say) rather than the common native species. This was later confirmed by dissection.