

**THE OCCURENCE OF THE NON NATIVE BROWN ALGA
SARGASSUM MUTICUM AND RED ALGA *ASPARAGOPSIS ARMATATA*
AT LUNDY**

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Sargassum muticum, also known as Japweed, wire weed or strangle weed, is a brown alga (Chromophycota) which naturally occurs in Japanese and Chinese waters. It is known to cause the physical displacement of native brown algae such as sea oak, *Halidrys siliquosa*, and sugar kelp, *Laminaria saccharina* (Eno, Clark & Sanderson 1997).

S. muticum was first discovered in British waters as attached plants at Bembridge, Isle of Wight, in 1971 (Eno, *et al*, 1997). It is assumed to have arrived from France. Spores may have been transported by ballast water, on the hulls of vessels or by rafting or floating as whole or fragmentary plants (Critchley, Farnham & Morrell 1983).

The Lundy warden, Andrew Gibson, first reported the presence of *S. muticum*, at Lundy, in 1993 (Eno, *et al*, 1997). At that time the alga was reported as restricted to rock pools in Devil's Kitchen and beneath the Sentinels in the Landing Bay. However, specimens were not collected for confirmation of identification and the records must be considered unsupported and possibly dubious (*Sargassum* may be confused with *Cystoseira* species). By 1999 no plants were recorded from these areas (Liza Cole pers. comm.; author pers. obs.)

In the late summer of 1999 a small number of *S. muticum* plants were discovered between the nearly completed new jetty and the north side of Rat Island leading to Hell's Gates. These were attached to the substratum at an approximate depth of 3 m below chart datum and were small in size (approx. 0.5 m tall). The wardens collected all free-floating plants detected in the reserve. Care was taken to gather all fragments to avoid vegetative spread.

Diving during summer 2000, by the wardens and local dive groups, revealed that

S. muticum was present across the south end of the Landing Bay between the new jetty and Hell's Gates and along the northern edge of Rat Island. Individual well-established plants were also discovered amongst kelp across the middle of the bay and spreading northwards. At depths greater than 3 m below chart datum level the alga was growing in the distinctive 'bushy foxtail' habit.

It was decided by the wardens that the issue of spread of the non-native alga should be reported to the Marine Nature Reserve (MNR) management group. As such, no attempt was made to clear *S. muticum*, pending a decision.

So how did *S. muticum* arrive in the MNR? There are two likely methods of introduction: *S. muticum* has a life strategy allowing colonisation by vegetative propagation. The author has observed two large (approx. 2 m²) rafts of the alga, from the *M.V. Oldenburg*, floating in the Bristol Channel, during 1999 and 2000. It is possible that such a raft arrived at the Landing Bay and spread into the reserve. The other possibility is connected to the construction of the new jetty. The jack-up rig *Charlotte Louise* was used throughout the summer of 1999 in the construction process. The rig arrived at Lundy direct from Milford Haven, Wales, which has a documented population of *S. muticum* (Leigh Jones pers. comm.). It is possible that the *Charlotte Louise* introduced the alga to the MNR via its superstructure. Subsequent movement of the rig around the construction site may have facilitated the spread of the non-native alga. However, *S. muticum* had arrived on the North Devon mainland at Ilfracombe in about 2000 having been unrecorded there before (Keith Hiscock, pers. comm.) so that the Lundy occurrence corresponds to geographical spread nearby.

Pending a management decision for the control of the alga, all attempts in British waters to control *S. muticum* have failed (Eno, Clarke & Sanderson 1997), it would be useful to monitor its spread. This could involve volunteer divers surveying the Landing Bay, Rat Island and Devil's Kitchen recording the location and size of *S. muticum* detected (the Marine Conservation Society initiated a survey in summer 2001: Robert Irving, pers. comm.).

Whilst diving beneath the new jetty (August 2001) the author discovered the presence of a second non-native algal species. *Asparagopsis armata*, harpoon weed, is a red alga (Rhodophycota) originating from Australia and/or New Zealand. It was previously recorded from Lundy (first British record) in 1949 (Harvey & Drew 1949), but as the 'fluffy' tetrasporic '*Falkenbergia rufolanosa*' growth phase. This was also locally common off the east side in July 1975 (Haisworth [sic] 1975).

In 1972 one example of the gametophyte phase habit was recorded (Haisworth [sic] 1975). The author's observations showed that both life phases of *A. armata*

were present during late summer and early autumn 2001. The gametophyte phase is abundant in the Isles of Scilly but little recorded further north in Britain (Keith Hiscock, pers. comm.). Occurrence of both phases should be monitored during subsequent years, especially as more frequent occurrence of the gametophyte (harpoon weed) phase may result from seawater warming.

REFERENCES

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