THE DISTRIBUTION OF ZOSTERA AND RUPPIA IN THE FLEET

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Synopsis of a report to N.C.C. by Alconbury Environmental Consultants

The Fleet, a large tidal lagoon on the south Dorset coast, is, together with the Chesil Bank, a Grade 1* NCR site and notable for its diversity of winter waders and wildfowl as well as its ancient Swannery at Abbotsbury. There are extensive beds of Zostera (Eel grass) and Ruppia (Tassel weed) in the Fleet which are of considerable significance both for the well-being of the swan population and in their own right. Such extensive mixed populations of these two aquatic plant genera are virtually unknown from elsewhere in Britain. This investigation, which attempted to map the exact distribution of the species, was partly generated from fears that the 'grass' was under threat from a variety of sources. The data collected form a base line to assess the stability of the different populations.

The survey was carried out in early August 1983. The whole of the Fleet was surveyed, but the west and east ends less intensively than the main body of the Fleet. Data were collected from 250 quadrats each of about 100m^2 from grabs of material using a grapnel and from observations on the shore. Selection of sites was randomised within blocks. Semi-quantitative data on the relative abundance (cover and biomass) of individual species of aquatic angiosperms was collected and information on depth, substrate and associated algae tabulated. About 50 algal and mollusc samples were collected for others to investigate.

Four aquatic angiosperms were recorded and many new features of the flora emerged. Zostera angustifolia, Z. nolti and Ruppia cirrhosa are common in the Fleet; R. maritima less frequent and locally distributed. There is a clear zonation of species along and across the Fleet. R. cirrhosa is dominant in the west Fleet, where Zostera is absent, and declines to the east whilst Z. angustifolia, in almost a mirror image of the former's distribution, increases towards the east. In the centre of the Fleet the greatest variation is shown, with all four species being dominant within individual quadrats and all commonly represented. Z. nolti has a restricted distribution in the central stretch of the Fleet and shows a clear lateral distribution across the Fleet, dominating most frequently along the northern shore and occurring much less sparsely in the shadow of the Chesil. R. maritima is rare and shows a very disjunct distribution. Z. marina, previously reported, was not found.

Other species recorded include the rare stonewort, Lamprothamnion papulosum, which has a population stronghold in the Fleet. The green algae Ulva and Chaetomorpha are abundant in the Abbotsbury embayment to the west. Enteromorpha occurs sparsely throughout the Fleet and thrived at the outflow of a stream which had killed all the aquatic flowering plants. Tough filamentous Chadophoralean algae were dominant in the upper reaches of the Fleet where they smothered much of the Ruppia. Other algae were noted, including Sargassum drifting upstream which were generally unhealthy and dying.

Threats to the Zostera and Ruppia are assessed. Although the populations appear healthy and thriving, there is still great concern from many quarters based upon the observations of locals that they are threatened and declining. They maintain that: a) the populations of species have changed; b) the abundance of 'grass' has declined; c) the grass dies back earlier leaving less food for winter wildfowl; d) algae have increased dramatically. Due to the lack of detailed baseline data, it is impossible to draw firm

conclusions from the survey, however the possibility of species populations having changed is discussed. This may be due in part to the 1930's Zostera decline and to hard winters. These population changes could also account for points b) and c). The recent increase in algae is identified as the greatest threat to a balanced flora in the Fleet. This problem may be increased by the effects of a bad winter, but enrichment of the water is thought to be the prime cause. This could have arisen from agricultural or domestic effluents or from eutrophication from the large swan population if the latter has increased in the last decade.

The report recommends i) a further survey should be carried out within the next three years to show whether the population of aquatic angiosperms is stable or fluctuating in order that causes of any fluctuations might be identified and remedial steps taken; ii) further statistical treatment of raw data tables; iii) further controls on discharges into the Fleet which cause local eradication of Zostera and Ruppia; iv) an analysis of swan population changes to assist in any nutrient budget investigations.