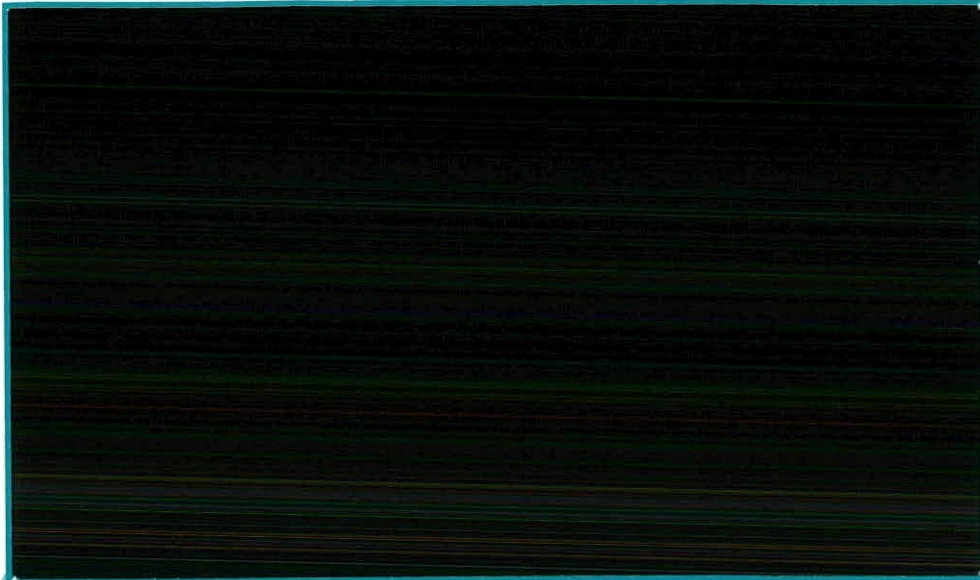




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**INSTITUTE OF TERRESTRIAL ECOLOGY  
(NATURAL ENVIRONMENT RESEARCH COUNCIL)**

**CEH PROJECT T 08074 C 5  
(MAFF Project CSA 2313)**

**MAFF / NERC CONTRACT**

**SEDIMENTATION AT TOLLESBURY, ESSEX  
AND DEVELOPMENTS AT SALTRAM, DEVON.**

**Supplementary Report**

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**March 1997**

## **INTRODUCTION.**

This Report is intended to be read with the previous Reports on the large scale managed realignments research that has been conducted by the Institute of Terrestrial Ecology on behalf of the Ministry of Agriculture, Fisheries and Food. These reports were agreed with MAFF and are entitled:-

Large Scale Experimental Managed Realignment. Volume 1. At Tollesbury, Essex.

Large Scale Experimental Managed Realignment. Volume 2. Saltram, Devon.

Large Scale Experimental Managed Realignment. Volume 3. Appendices.

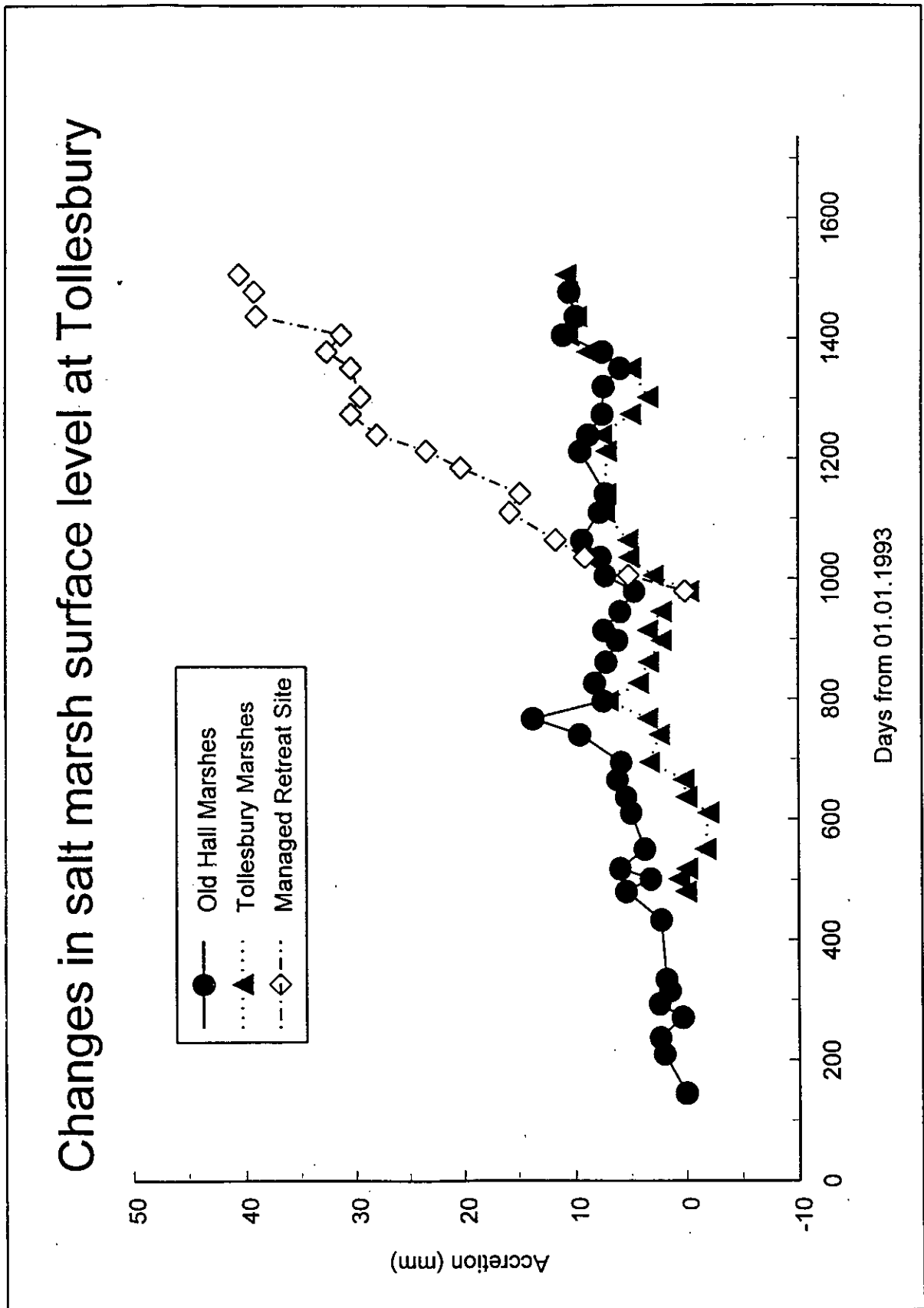
This Report is in two parts; the first part updates the presentation on the rates of accretion at and near the Tollesbury site to include the data collected during the last winter; the second part sets out and discusses some observations from the Saltram site made during a visit to the site on March 25th, 1997.

### **1. Rates of Accretion at Tollesbury**

The patterns of accretion both within the Tollesbury site and on the adjoining marshes has continued over the winter of 1996/97 with little overall change (Fig. 1.1). Overall there was slight erosion in November (equivalent to  $15.84 \text{ mm yr}^{-1}$ ) but high rates of accretion in December (equivalent to  $92.64 \text{ mm yr}^{-1}$ ) were more than enough to overcome the temporary losses. Since the commencement of accretion monitoring in September 1996 the mean rate of accretion has been at an average rate of  $30.37 \text{ mm yr}^{-1}$ . This figure is slightly higher than the previous estimate, made in October 1996, of  $29.0 \text{ mm yr}^{-1}$ .

The pattern of accretion/erosion in the adjoining marshes, both on the Tollesbury and Old Hall sides, has continued in a similar pattern to that of previous winters with virtually no net change in surface level (Fig. 1.1). This contrasts with the continuance of accretion within the site itself during the winter months. It will be interesting to see if the usually higher rates of salt marsh accretion observed during the spring are mirrored by even higher rates within the site during the coming months.

Figure 1.1 Changes in salt marsh surface level at Tollesbury



## **2. Further observations at Saltram Devon.**

The managed realignment site at Saltram, Devon, was visited on March 25th 1997 and some general observations made. The visit was made in company which included Ian Dyack, Andy Bell, and John Banfield and during the course of the visit the general management of the site was discussed.

### **2.1 Recent development in site management**

The early problems with the sluices have been rectified and the overall height of the spillway has now been raised by 0.10 m to maintain the frequency of flooding between 20-40 times a year. Vandalism of the sluices is still a problem particularly during holiday periods but with regular checks and the development of repair techniques the effects of any vandalism has been greatly reduced. At the time of the visit the site had not been flooded since the spring tides in early March.

Standing water on the site was limited to three small pools on the lowest parts of the site, effectively to those areas below the 1.00 m OD contour. The creek system that been dug by hand in December 1995 has largely silted up and now contributed little to the drainage of the site. The proposal was to use machinery to excavate a new system on the line of the original creeks. This time however the excavation would be on a larger scale with graded sides to the channel and a minimum invert width of 800 mm. The invert itself would be graded to give a gentle fall from the lowest areas of the site to the main drainage channel inside the sea wall. This would involve excavating the channel to depths of up to approximately 600 mm to give the necessary fall.

It was considered important that the excavated material should be moved away from the creek system and dumped in the south-east corner of the site to reduce the likelihood of the excavated material being washed into the newly excavated creeks.

It was recognised that even after the proposed drainage improvements there would probably be one or two small residual pools at the heads of the creeks but that this would provide habitat for invertebrates and thus be of benefit to visiting wading birds.

### **2.2 Botanical observations**

The vegetation developments on the lower parts of the site were particularly striking. No formal recording was possible during the short visit but it was clear that since the recordings in June 1995 and June 1996 there had been a major extension of plant cover. On the areas that were subjected to intermittent flooding the vegetation cover was high with extensive dense patches of both Lesser Sea-spurrey and of Common Scurvey-grass. Between these patches there were abundant seedlings particularly of Lesser Sea-spurrey and of Spear-leaved Orache.

Most of these seedlings were, however, too small for accurate identification and it is highly likely that as the year proceeds it will become clear that, in addition to the increase in vegetation cover, the floristic diversity has increased. The likelihood of this increase in diversity is underlined

by the fact that during the course of the present visit two plants of Sea Purslane were found on the site for the first time.

Even in the low areas subject to regular flooding scattered seedlings were found in all but the very lowest areas around the three pools of standing water. The density of the seedlings were quite low, at one seedling per square metre or less but nevertheless there were apparently healthy seedling growing in these areas for the first time.

The low areas had previously been characterised by extensive mats of algal growth. Earlier concern had been expressed about the potential effect of such an algal mat on the establishment of seedlings. With the regulation of the sluices and the improvement in drainage the algal mat had decreased somewhat although there were still some patches with a significant mat of algae covering the surface. It was observed, however, that seedlings had been able to grow up through this mat and root into the soil beneath. There had been no visible effect on seedling establishment.

## **2.3 Conclusions**

### **Site drainage**

Although it was clear that the improvements to the sluices had improved the drainage of water from the site, there was general agreement that the excavation of the proposed creek system would greatly improve the drainage of the site and further benefit the establishment and growth of vegetation. Nevertheless it was recognised that such works would involve significant expenses. The timing of such operations would therefore be dependant on the availability of sufficient funds although it was hoped that the work could be completed in the near future.

### **Botanical developments**

The large number of seedlings observed on the site can be taken to indicate two important developments. Firstly it shows that most of the site is now open to the development of vegetation with a degree of salt tolerance. Secondly it shows that the process of the development of floristic diversity as a result of the immigration of new plant species (e.g. Sea Purslane) is increasing in pace and is like to accelerate during the next few years. Indeed there are probably several other species now present as small seedlings and whose identity will be recognised during the course of the growing season. It will be of major importance to the principles of salt marsh creation, by managed re-alignment, to follow this process of the arrival of new salt marsh plant species and so it will be very important to identify the new species as they arrive and to determine the distance to the nearest seed source in the adjoining estuaries.

## **Recommendations**

1. In view of the of the visible benefits of the existing improvements in site drainage it is recommended that the proposed further improvements in the form of the excavation of the creek system be implemented as soon as practicable (This Report Section 2.1 para b).
2. The next three to five years are clearly going to be crucial in the process of plant immigration to the site and it is recommended that the botanical monitoring be continued annually together with the improvements in sampling suggested in the recent Report (Large Scale Experimental Managed Realignment. Volume 2. Saltram, Devon).
3. It would appear that the technique of quadrat mapping will be feasible and appropriate for the majority of the quadrats in all but the lowest quadrats (Conclusions and Recommendations - Large Scale Experimental Managed Realignment. Volume 2. Saltram, Devon).





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