CHAPTER 10

INTERSITE VARIATION OF INFESTATION IN OYSTER SHELLS

In the preceding chapter intersite differences in size were considered using statistical tests to show that patterns existed on a spatial and temporal level. In this chapter intersite variations in infestation of oyster shells are examined. The approach has been much simpler than in the study of size. Basically, it has consisted of collating the percentage frequencies of the different categories of epibiont damage on individual sites into regional groups. Comparisons were made by a visual examination of the data in the tables and the histograms of frequencies. This alone was sufficient to determine that there were readily observable regional differences in infestation. The application, in due course, of thorough analytical techniques following the reduction of infestation frequencies to computer-recognisable log categories would be most desirable. It is hoped that this kind of analysis would show up additional patterns.

In the tables and histograms that follow, the different types of infesting organism are referred to by the Latin numerals i to viii. For convenience of presentation, the samples to which the infestation details refer are called by their sample number (1 - 75). A key is provided with both tables and figures. Infestation details were not available for most of the modern oyster samples with the exception of the Poole ones, the 1987 Sowley Ground Solent sample, and the Colchester Feast oysters. Extra archaeological samples were therefore used in the infestation analysis. These came from the Greyhound Yard site in Dorchester, and the Corfe Castle excavations in Purbeck. Sixty-six samples in all were used. Evidence of infestation was recorded on a presence or absence basis and did not take into account the severity of attack. Therefore, the figures can be considered an underestimate of the degree of infestation - particularly in modern samples where sediments, soft-bodied flora and fauna, and closed valves tended to obscure the picture.

The numbers of shells in each individual sample affected by the eight major groups of infesting or encrusting organism have been tabulated. Table 10.1 gives the rate of infestation in east-coast samples.

Table 10.2 gives the rate of infestation for individual samples from London and north Wessex. Table 10.3 gives the rate of infestation for individual south-coast samples. The information provided by the tables 10.1 - 10.3 has been drawn up as histograms which are easier to understand. Figures 10.1 to 10.8 take the percentage frequencies of infestation by each organism and present them in groups for the east coast, London and north Wessex, and south coast. The bars representing modern samples have been shaded.

Figure 10.1 shows infestation by Polydora ciliata. This is present in all samples. The frequency varies a great deal, even among samples for which it has been demonstrated that their is no significant difference in size. It is particularly noticeable that the modern samples have higher than average levels.

Figure 10.2 shows infestation by Polydora hoplura. Evidence of this species is totally absent from east-coast samples. There are very low levels in samples from London and north Wessex. In this region the identifications of P. hoplura were tentatively ascribed to large burrows found atypically on the outer surface of shells. In the south-coast region P. hoplura was recorded in varying but generally low levels from all samples. The highest level was found in shells from Newport Roman Villa (43). The real levels of infestation in the modern Poole samples (28-31) were probably a lot higher than indicated since this particular worm is found internally and records depended on oysters opening naturally on exposure to air, and spotting large mucous tubes protruding from the valves.

Figure 10.3 shows rates of infestation by Cliona celata. Levels of this organism are uniformly low in both the east-coast samples and the London and north Wessex ones. Highest levels are noted in the shells from Corfe Castle and the Greyhound Yard (Dorchester). The latter were especially thick and heavy Roman shells probably collected in Poole Harbour. Sponge usually invades such older oyster shells, and is known to prefer the warmer, shallower waters of the south and south-west coasts.

Figure 10.4 shows infestation by calcareous tubes. These are absent or virtually absent in samples from the east coast, and London and north Wessex regions. The greatest percentages are recorded for the modern samples from Poole and Southampton. Variable but small quanties were found in samples originating in the Poole region. Hardly any were found in archaeological samples from Southampton.

Figure 10.5 shows infestion rates by barnacles. Highest overall levels were found in east-coast samples with very few indeed surviving in archaeological shells from either London and north Wessex or the south coast. In modern samples from both east and south coasts, levels ranged from about 50 - 95%.

Figure 10.6 gives infestion rates for Polyzoa. In archaeological samples the lowest frequencies were recorded for the south coast when compared with the other two regions. Again, frequencies in modern samples were highest.

Figure 10.7 shows the frequency of boreholes in oyster shells. These were found at less than 5% levels in Suffolk samples, i.e. Bury St Edmunds Abbey, Burrow Hill and Leiston Abbey; but in none of the Essex samples. The frequencies increase in samples from London and north Wessex. Variable frequencies, but at a generally higher level than elsewhere, were found in the south-coast samples.

Figure 10.8 shows infestation rates by sand tubes. Although there is an individual sample (32) with 27% of shells affected in the Poole region of the South coast, most sand tubes were observed in samples recovered from London and north Wessex.

The percentage frequencies of infestation by each type of organism has been averaged out for each region, and separated into the three categories of all samples, archaeological samples and modern samples only. These figures are presented in Tables 10.4 -10.6. The corresponding histograms are given in Figures 10.9 - 10.11.

To sum up the results from the infestation analysis, there appear to be significant differences in the type and frequency of infestation in the three regions. The most noteworthy being the absence of Polydora hoplura and calcareous tubes from the east-coast oyster shells with corresponding high levels of barnacles and Polyzoa. The south-coast samples were characterised by the presence of P. hoplura, calcareous tubes and sponge borings - all of which were virtually absent from the other regions - and the greatest number of boreholes. The London and north Wessex samples bore a greater resemblance to oysters from the east coast than the south with regard to most characters; they also had slightly higher levels of sand tubes than elsewhere. The regional differences can been seen in both the individual and grouped samples as well as the archaeological and modern samples. There does not appear to be any gradual transitional pattern in samples along the coast. Nor is there a readily discernible pattern of infestation from period to period.

The following chapter, 11, brings together the evidence from this and the preceding chapters to reach conclusions about the role of oysters in the economy over the past two thousand years including their dietary contribution, the level of their exploitation, and their place in trade. The way in which oyster farming may have developed will also be discussed. Finally, the influence that the natural and man-made environment may have had on the availability of oysters and on macroscopic changes in the shells will be considered.