Quantitative Measurement of Effect on Oysters of Disease Caused by "Dermocystidium marinum"[1]

SAMMY RAY, *Rice Institute, Houston, Texas;* J. G. MACKIN *and* JAMES L. BOSWELL, *Texas A. and M. College, College Station, Texas*

ABSTRACT

Measurement of effect of the *Dermocystidium* mycosis in terms of weight of oyster meats has been accomplished by analysis of measurements of meat weights and shell capacity of 508 oysters over a period extending from April, 1952, to August, 1952. The 508 oysters included 198 heavily infected with *D. marinum*, 83 moderately infected, and 227 either lightly infected or

1 Published in Bulletin of Marine Science of the Gulf & Caribbean, Vol. 3 No. 1.

negative. Weights of meats of heavily infected oysters and moderately infected oysters are compared, per unit of shell capacity, with the negative and lightly infected group. The data show that the average mean of meat weights of heavily infected oysters was about 33 per cent less than that of the controls and that the moderately infected oysters were intermediate in loss of weight. Mathematical analyses of the data support the conclusion that disease plays a major role in reduction of meat weights.

Analysis of the data also shows that reduction of weights is not only a matter of disease but of season, summer losses accruing from disease being significantly greater than those of early spring months.

Experimental studies which eliminate factors of nutrition point to lysis of tissues as one of the major processes resulting in loss of weight. In these studies reduction of bits of excised gill tissues which were heavily infected with the fungus is compared with that of normal excised tissues when bacterial and other contaminants are excluded.

Statistical methods and procedures are fully described.

Distribution of Oyster Larvae in Relation to Hydrographic Conditions

D. W. Pritchard, Director
Chesapeake Bay Institute
The Johns Hopkins University

Observed Distribution of Salinity and Circulation Pattern

In the summer of 1950 the Chesapeake Bay Institute of The Johns Hopkins University, in cooperation with the Virginia Fisheries Laboratory, undertook an intensive study of the physical and chemical hydrology of the James River oyster seed bed area. A detailed discussion of the observed current velocities and salinities is presented elsewhere (Pritchard, 1952). The discussion here will concern the circulation pattern and mixing processes, as indicated by the observations of velocity and salinity.

First, consider briefly the character of the salinity distribution. Figures 1 and 2 show the surface salinity distribution over the seed bed area of the James River for low and high water, respectively, on September 2, 1950. The following common features are noted: (1) an increase in salinity from the head of the estuary, where the fresh water enters, toward the mouth; (2) a salinity gradient across the estuary with higher salinities on the left side of the estuary than on the right side (directions are taken relative to an observer standing at the head of the estuary and facing toward the mouth); (3) the tidal fluctuation does not greatly alter the general picture, but rather shifts the pattern up and down the estuary.

In Figure 3 examples of the vertical distribution of salinity are given. These mean salinity vs. depth curves are similar to an inverse tangent function, with an upper and lower layer of slight vertical gradients separated by a halocline of relatively rapid change in salt content with depth. At the bottom, and to some extent at the surface, the curve shows increased gradients apparently related to boundary effects. The character of the vertical distribution does not change greatly with longitudinal distance. Consequently, the horizontal gradients do not vary appreciably with depth.