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STATUS OF MSX IN CHESAPEAKE BAY  
Jay D. Andrews & J. L. Wood  
20 Sept. 1961

Oystermen in lower Chesapeake Bay survived the ravages of Dermocystidium during some hot summers in the past decade only to be scourged by a new disease which appeared in 1959. We had learned to live with Dermocystidium by avoiding infected seed and limiting the number of hot summers oysters were held in infested areas. Now we have the more difficult problem of adjusting to MSX which is a devastating killer of oysters.

MSX is continuing to kill oysters in lower Chesapeake Bay at a rate prohibitive to oyster planting. New importations of disease-free seed to such areas as Mobjack Bay, Hampton Bar and Gloucester Point, experienced mortalities beginning in August and September 1961 just as in 1960. The hope that isolated plantings would survive in areas such as Mobjack Bay where most oysters have been marketed or died has not been fulfilled. There has been no important extension of areas afflicted with MSX and no noticeable retreat from oyster areas has been observed in 1961.

Seasonality of Infections & Deaths

MSX kills oysters mostly in the summer and fall. Most deaths from MSX

occur from June through October. Apparently most infections also occur during this same period when oysters are dying. The time of first kill depends upon the time of planting. It may vary from 6 weeks after infection to 8 months. A useful rule-of-thumb is that oysters infected in early summer die in late summer and those infected in late summer die the following early summer. A small late winter death rate occurs in populations which have had previous losses from MSX. Oysters infected for the first time in late summer do not exhibit a late winter death rate.

Losses from MSX are usually about 50 per cent the first year and slightly less each succeeding year. Once a bed is infested, oysters continue to die throughout the year with the greatest losses occurring from July to November.

#### Dermocystidium

Dermocystidium, the fungus disease of oysters, has so far been at a relatively low level in 1961. Very few oysters with infections survived from 1960 mortalities. This has reduced and delayed infections this summer. Hot weather around the 1st of August and the 1st of September has resulted in a rapid increase in Dermocystidium infections and it is now an important cause

of deaths in areas where some old oysters were left. Late summer and fall deaths of oysters can be caused by MSX or Dermocystidium or both.

#### Distribution and Status of MSX by Areas

The opening of James River seed beds on 1st October poses these problems for each planter: 1. where can disease-free seed be obtained and 2. where is it safe to plant? A review of present knowledge by areas should be helpful although each oysterman must accept responsibility for his decisions.

1. James River. As far as we know, seed above Wreck Shoal is free of MSX. Recent samples <sup>show</sup> indicate as many as three infections in 25 oysters on Wreck Shoal which is quite low. However, last winter one-third of Wreck Shoal oysters had MSX from mid-summer infections. Most of these oysters got rid of the disease and there was no appreciable death rate on Wreck Shoal. These samples at Wreck Shoal were taken close to the channel and apparently oysters inshore and in shallower water did not get infections. Oysters at Brown Shoals continue to die and show considerable MSX. The lower part of the seed area should be avoided particularly by planters in disease-free or border-line areas. Hampton Roads and the lower parts of its tributaries are infested with MSX. These areas

should not be used as seed sources in disease-free areas and planting in Hampton Roads is risky.

2. York River and Mobjack Bay. It is not possible to give any detailed advice on safe planting areas in the tributaries of Mobjack Bay. Oystermen can best judge where it is safe to plant by recent experience. If heavy unexplained losses with the timing of deaths described in this report are observed, there are strong reasons to suspect that MSX is active. In our experience no area once infested with MSX has been found subsequently to be free of the disease.

Losses have been reported up the York River as far as Clay Bank but our trays outside of Foxes Creek (above Cappahosic) have shown no evidence of MSX kills. Recent samples from B. M. Bunting's ground about opposite Clay Bank revealed two infections in 25 oysters.

3. Rappahannock River. Some losses were experienced at the mouth of the Rappahannock River in 1960. Spring samples showed an increase in MSX below Hoghouse which we presume resulted in extensive losses. This has not been checked yet. There has been very little evidence of MSX activity at Hoghouse

and higher in the river. Recent samples, including one from a private ground above Urbanna Creek where losses had been quite heavy, show no disease (one case in 25 oysters at Hoghouse was an exception). Public grounds and private beds examined show no recent deaths (except one) and if this is generally true, it is almost certain that no losses from MSX will occur now before June and July 1962. Beds which look normal now undoubtedly escaped early summer infections and there is no more reason to expect late summer infections. In short, the prospects look excellent for oyster culture in the upper Rappahannock River above Hoghouse.

4. Potomac River. Not much is known about the Virginia tributaries of the Potomac. No MSX has been found in samples from Nomini Creek. MSX-infested oysters were found at the mouth of the Great Wicomico in 1960.

5. Pocomoke Sound. No recent samples have been collected from Pocomoke Sound but MSX was found in abundance all the way to the Maryland line in 1960. Presumably retreat to low-salinity waters is the only safe course of action in this area.

6. Bayside Creeks of Eastern Shore. There are so many creeks it is not

feasible to sample enough to draw lines of distribution for MSX. Oystermen must rely upon experience with individual beds based upon the magnitude and timing of losses to judge whether MSX is active. Cherrystone Creek and the Gulf are two areas of regular sampling where MSX is known to occur in abundance. Creeks higher up the peninsula are less salty and may have better prospects.

7. Seaside of Eastern Shore. Nature is always reluctant to give up all her secrets and Seaside has more than its share in respect to Dermocystidium and MSX. MSX was first found on Seaside three years ago this coming October yet we have not observed any epidemic of oysters big enough to detect. It is present in all areas we have sampled and as many as five cases in 25 have been observed yet no epidemic has occurred. This is a most fortunate situation for Seaside oystermen and we hope this status is retained. It has been argued that Seaside oysters are more resistant to MSX than others and this may be true in part but James River oysters moved to Seaside have so far shown the same exemption from losses.

almost impossible to follow and predict events in such areas.

We have had excellent cooperation from oystermen in our studies and we would appreciate continued advice and warnings of possible trouble.

### Seaside Organism (SSO)

During our monitoring studies for MSX on Seaside, we encountered a new disease of oysters caused by an agent which we call SSO (Seaside Organism). It kills oysters in a short epidemic in May and June before MSX kills abundantly. Losses are usually of the magnitude of 10 per cent each year in young oysters of typical plantings. If such oysters are held an extra year, as many as 50 per cent may die from SSO. This disease seems to have been on Seaside for a long time and presents no serious threat to the industry. It is apparently restricted to the very high salinity waters of Seaside for the most part and probably can not persist in Chesapeake Bay.

In the past two years, we have experienced a considerable amount of effort examining samples of oysters for oystermen as a basis for predictions and warnings. We believe that effort in other directions will bring more benefit now. Most important are the efforts to breed resistant oysters and to learn more of the life history of MSX. We will be continuing our watch over major growing areas for signs of improvement and we think oystermen should also make and watch trial plantings. There is still much to be done to understand border-line areas where the disease comes and goes. It will be