PRELIMINARY NOTE

ON

THE WAFER

(Leptoplana australis),

A SPECIES OF DENDROCOELOUS TURBELLARIAN WORM, DESTRUCTIVE TO OYSTERS.

By

DAVID G. STEAD,

Naturalist to the Board of Fisheries for New South Wales.

Department of Fisheries, New South Wales.

[*Issued, November, 1907.*]

DEPARTMENT OF FISHERIES, NEW SOUTH WALES.

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A species of Dendrocoelous Turbellarian Worm, destructive to Oysters.

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In the waters along the coast of New South Wales are to be found a number of species of marine worms belonging to the order of Turbellarians. These are related to the familiar objects known as "Fluke-worms"; but, unlike the latter, are free-swimming and non-parasitic in habit. They are most abundant in rocky situations, or in the vicinity of loose boulders. From the popular standpoint, perhaps these would hardly be recognised as worms, as they are flat, thin, slimy objects, normally oblong or ovate in shape. The shape, however, is exceedingly variable, according to the situation in which the worms find themselves. In some of the species, the same individual may now be long and narrow, while a little later it may be almost circular in outline. Some of these Turbellarians are extremely beautiful in color.

The subject of this preliminary note, *Leptoplana australis*, which is, perhaps, the most common form, belongs to the division of *Dendrocoelous* Turbellarians, so-called because of their highly-branched and tree-like intestinal canal (which shows whitish, and is clearly visible through the skin of the lower surface). This species is to be found at all times, in greater or lesser abundance, in the lower (and salter) parts of our estuaries and harbors, where it will be found adhering closely to the rocks or loose stones, usually in some sheltered position, such as the lower surface, or in cracks

and crannies. At certain times* they appear in considerable numbers, and occasionally I have lifted stones in Port Jackson, each one of which had at least a dozen attached to it. At times I have collected this *Leptoplana* in close proximity to oysters, and knowing the carnivorous habits of its terrestrial relatives, the land Planarian worms, have considered it likely that the oysters might be at times subject to attack, though positive evidence until recently has not been forthcoming.

Before proceeding any further, I might mention that the colors of this organism are as follows :—

Upper surface, light brownish ground, mottled all over with darker brown, and darkest towards the central portion. The lighter ground color often shows as radiating streaks. The lower surface is creamy yellow, or grayish, the highly-branched intestinal tract showing up clearly through the skin. When freshly taken from the water the whole surface glistens, and is covered with a slimy mucus.

A few years ago I found that this worm was known to a few of the oyster farmers of George's River, who had repeatedly observed it amongst oysters on various leases, and that they distinguished it under the name of "Wafer." As this name appears to be fairly suitable, I propose for the future to use it in speaking of this worm. Though, as I say, the Wafer has been known to certain lessees, no definite connection between the oyster and this worm has been shown to exist, and no satisfactory evidence has been brought forward to show that the latter was to be added to the already long list of oyster pests. However, in the light of recent evidence, I think it will be found that this is a pest, that it is at times to be seriously reckoned with, and that it will be found to be fairly widespread in our oyster-producing waters.

At the end of July this year (1907), Mr. J. W. Swainson, of George's River, handed to me for determination a number of examples of the "Wafer," which, he said, was very plentiful on his

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* Judging by my present data, they appear to be most plentiful during dry weather (and particularly while mild or high temperatures prevail) when the water of our estuaries is of greater density.

leases at that time. No visit was made by me for the purpose of investigating the matter. During the early part of September, Fisheries Inspector Latta brought in a specimen of an oyster (from a lease in the Hawkesbury River) which was in the last stage of destruction by one of these flat worms, and which contained the worm itself. This specimen had been handed to Mr. Latta by Mr. J. Izzard, who had stated that the worm was very plentiful on his leases at Bar Island and Pelican Island, and that apparently it was destroying the oysters. Upon this, it was so arranged that I made a short visit to the locality in question, for the purpose of obtaining more definite information. At Bar Island I found the Wafer present in large numbers, and some were found actually at work between the valves of the oysters. Large numbers of gaping shells of oysters only recently killed were to be seen on all hands, while the same was apparent on Pelican Island (which is submerged at high water). In view of the very positive evidence obtained at the time, it is only fair to assume that at least a part of these—if not all, probably a very large percentage—had succumbed to the attacks of the Wafer. I must here point out that, although the common oyster worm (*Polydora* or *Leucodore*) was only too abundant on portions of these leases, none of the recently dead and gaping shells which I examined showed the least sign of its attacks, or of the attacks of the common "Drill" or "Borer" (*Urosalpinx*), although I found the latter (previously unrecognised from this locality) to be fairly plentiful.

It is of interest to mention that, at the time of my visit, the oysters were all "opening very badly"—that is, they were in poor condition, and were likely to remain so until the advent of a freshet in the river.

Method of attack.—After gaining an entrance between the valves of the oyster, the Wafer proceeds to wrap itself round the upper part of the oyster, as close to the great adductor muscle (which so powerfully keeps the two shells shut) as it can get. It then proceeds to pour out a great amount of thick, stringy, slimy mucus, which perhaps has the effect of partly digesting the body of the oyster, so as to prepare it for absorption by the Wafer. Certainly in those which have come under my notice, the adductor muscle, usually the

hardest part of the body of the oyster, is, after being attacked by the Wafer, quite soft, though smelling quite fresh.

One aspect of the case which is very puzzling is, as to how the worm gains entry between the shells of the oyster without the latter "closing down" on it; as, if it did, the Wafer would surely be nipped in two.

I must here mention that the fact of the Wafer preying upon the oyster—although hitherto unrecorded—cannot be looked upon as very startling, as some allied fresh-water forms in Europe are known to prey upon pond snails, crustaceans, water beetles, &c.

In conclusion, I would like to point out that any information which can be given by any of our oyster farmers, in regard to the occurrence or habits of the Wafer in their respective waters, will be of the greatest value, and will assist in enlarging our knowledge of what might at any time prove to be a serious scourge.

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