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Settlement of Teredo larvae in 1937.

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SETTLEMENT OF TEREDO LARVAE IN 1937

by

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April, 1938.

See letter Apr. 30. 1938.

## SETTLEMENT OF TEREDO LARVAE IN 1937

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A.B.Needler and A.W.H.Needler.

Because shipworms are such a grave menace to wooden equipment used in the water it is important to know when the larvae are settling. It is then only that wood needs protection and, as the surface preservatives used on light equipment wear off, it is necessary to know what are the most dangerous seasons so that care can be taken to have the protection sound at that time. The experiment with test boards described here was a part of a wider attack on the shipworm problem as it affects oyster farmers.

The experiment was arranged and the placing of test boards supervised by A.W.H.Needler and the examination of the boards in the following winter was done by A.B.Needler who is taking over most of the Teredo investigations to be carried on at the Prince Edward Island Biological Station.

Exposure of the test boards. Two series of test boards were used - one in which all the boards were placed in the water at the start and individual boards removed periodically and another in which an individual board was placed in the water semi-weekly and left for one week only. In both series the boards were of planed spruce 1" x 6" x 18" and were suspended vertically beneath the landing stage at a depth which kept them covered by a few inches of water at low tide.

The first series proved to be of little value. The boards were placed in the water in June and disintegrated in August. Those which had been removed in the interim were attacked from the end of June on and corroborated the picture given by the other series in a general way.

The second series was started on June 17th and boards were put out semi-weekly until September 30th, each board being left in the water for a week. A few boards were lost but the series was fairly complete. The results of the examinations are given below.

Examination of test boards. Only a cursory examination was made when the boards were removed and the detailed examinations reported here were made during the winter.

On each board twelve strips  $\frac{1}{2}$ " x 3" were examined and the Teredo in each strip counted and recorded. Six strips were on each side and they were evenly spaced, each strip running from the edge to the middle of the board and alternately from the two edges. In this way comparable areas were examined on each board and the areas were widely scattered over the surface. The sets were so heavy that counting the entire number of larvae settled on each board was out of the question.

Results of the examination. The results of the examination are summarized in the table, in which the number of Teredo in each small area is recorded. The following conclusions may be drawn:

1. The first settlement of larvae was about June 25 and there was heavy settlement at the end of June and the beginning of July. The

## Settlement of Terebo larvae in 1937. Numbers of Terebo in small areas on test boards.

Date of exposure	Areas:											Av.	Remarks	
	A.	B.	C.	D.	E.	F.	G.	H.	I.	J.	K. L.			
1. June 17 - June 24	0	0	0	0	0	0	0	0	0	0	0	0.0		
2. June 21 - June 28	34	5	4	4	0	1	49	9	3	1	4	7	11.9	All depressions very shallow.
3. June 24 - July 3	6	5	1	0	0	17	12	5	4	7	9	17	6.9	A few very shallow, most completely into wood, many showing double hole
4. June 25 - July 6	42	1	2	2	17	40	48	5	4	4	3	27	18.5	
5. July 3 - July 10	22	7	4	3	3	41	19	1	4	2	19	7	11.8	
6. July 6 - July 13	18	4	10	1	11	11	5	2	0	0	8	2	6.0	
7. July 10 - July 18	40	0	0	2	0	5	12	12	7	11	3	7	8.1	Many well embedded but many quite shallow.
8. July 13 - July 20	9	3	1	4	2	15	12	4	4	10	5	12	7.8	
9. July 19 - July 26	49	17	23	12	2	34	27	11	4	2	3	23	21.0	Many still on outside of board. Probably large no. in "L" due to inclusion of rough spot on which these were protected.
10. July 22 - Aug. 1	11	14	3	4	22	47	2	14	1	2	3	22	14.0	Nearly all well embedded.
11. Aug. 2 - Aug. 9	0	0	0	0	0	0	0	0	0	0	0	0	0.0	One hole seen outside counted area.
12. Aug. 6 - Aug. 13	1	1	0	0	1	0	1	0	0	0	0	0	0.22	In "A" v. shallow, in "B" well embedded.
13. Aug. 12 - Aug. 20	0	1	0	0	0	0	2	0	0	0	0	0	0.25	
14. Aug. 20 - Aug. 27	1	6	4	6	0	6	1	3	1	2	0	4	3.0	Mostly well embedded with calcareous tubes.
15. Aug. 22 - Aug. 30	1	1	1	0	2	6	0	2	1	2	2	2	1.7	Most near surface, a few deeply buried.
16. Aug. 24 - Sep. 10	0	2	2	1	0	0	6	2	5	0	0	3	2.0	
17. Sep. 10 - Sep. 17	10	14	5	6	4	7	5	10	3	7	2	7	6.8	
18. Sep. 12 - Sep. 20	0	0	0	0	0	0	1	0	0	0	0	1	0.16	Larva on "C" on surface and broken.
19. Sep. 17 - Sep. 24	0	1	0	0	0	0	0	0	1	0	17	0	0.25	
20. Sep. 20 - Sep. 27	0	0	0	1	0	0	0	1	1	1	0	7	0.9	Most just entering.
21. Sep. 20 - Oct. 1	1	0	0	0	0	0	0	0	0	0	0	0	0.03	Larva in "A" deeply embedded.

Numbering from the same end areas were A, B, C, D, E and F on one side and G, H, I, J, K and L on the other. The boards were unfortunately not usually labelled so as to show which end was uppermost. In 3, 4, 5 and 6 the uppermost end was AG, FL, FL and FL respectively.

In cases with no remarks the larvae counted were embedded in varying degrees.

settlement decreased but remained considerable and the heaviest settlement of the year was in the last half of July. Settlement ceased for a time early in August but was resumed and light settlement continued to the end of September with a minor peak about the middle of the month.

This settlement is earlier than that reported by M'Gonigle for the Bras d'Or Lakes where, he states, *Teredo navalis* attacks in the first week in August. It confirms in a general way the experience that painting with a protective agent at the beginning of July is satisfactory, as the larvae settling before that time in 1937 would not have grown enough to do serious damage. But earlier treatment is shown desirable.

2. The intensity of settlement is heavy. The heaviest observed in a single small area throughout the season is about 228 per square inch and the lightest about 40. These totals are arrived at by totalling the settlement in areas "A" and "I" in the table in periods which do not overlap.

The settlement was most intense towards the ends of the boards. Areas A, F, G and L are next to the ends; areas B, E, H and K intermediate, and areas C, D, I and J towards the middle of the board. Averaging the larvae settling on areas of these three categories in a week's exposure we find 10.8 on the areas next to the end, 3.6 on the intermediate areas and 2.5 on the areas next to the middle.

Plans for investigations in 1938. Plans for *Teredo* investigations in 1938 include a repetition of the above work and extension to include the period from June 1st to and past the end of settlement. It is also planned to make two complete series throughout the season - one at or near the surface and the other at or near the bottom. An attempt will be made to link the time of settlement to physical conditions by observations on the occurrence of larvae in the water and on spawning and release of larvae.

Other phases of the general *Teredo* problem will also be attacked including further tests with preservatives, study of depth distribution of settlement, and study of the relation of the direction of the surface and the intensity of settlement.

Prince Edward Island  
Biological Station,  
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