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PLANKTON TOWS FOR LOBSTER LARVAE 1957.

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PLANKTON TOWS FOR LOBSTER LARVAE 1937

by

G. F. M. Smith

A series of 45 plankton tows was made near Pictou, N. S., between July 22nd and August 5th, 1937. The purpose of taking these tows was to obtain information about the distribution of lobster larvae with reference to light and wind action. A total of 350 first stage, 4 second stage and 3 fourth stage larvae was taken. A coarse plankton net (00) was used and all tows were one hour in duration.

It was observed, by taking simultaneous tows at the surface and at a depth from 2 to 4 fathoms, that the first stage larvae were concentrated at the surface during daylight. As many as 91 first stage larvae were obtained in a surface tow using two nets (tow 37-30a). Simultaneous depth tows in the daytime obtained no larvae or never more than 2 (tows 37-15a, 37-27a).

At night depth tows were almost as productive as surface tows showing that at night the first stage larvae tend to sink or scatter. (tows 37-21a, -22a, -44a, -45a). Tows taken before, during and after sunrise or sunset indicate that the change in vertical distribution of the first stage larvae in response to major changes in illumination is rapid. (tows 37-8a, -9a; -12a, -14a; -16a, -21a; -24a, -26a; -39a, -41a.)

The horizontal distribution of the first stage larvae was not uniform but the larvae were found concentrated on a lee shore and were blown off shore more or less in a body when the wind changed. On three occasions heavy concentrations of larvae were taken less than 300 yards off a lee shore. (tows 37-30a, -31a, -39a.) On a fourth occasion a concentration of larvae was found at the surface two miles from a windward shore that half a day previously had been a lee shore. (tow 37-43a).

It was observed that the first stage larvae taken during daylight were red but those taken at night were pale and bluish. Larvae taken just after sunset or sunrise were variable in colour. The number of larvae taken other than first stage was not large enough to warrant any general conclusion regarding distribution.

The tabulated data of the plankton tows and measurements of some of the larvae are given below.

Notes on lobster larvae and measurements of larvae.

Carapace length is the distance from the tip of the rostrum to the posterior margin of the carapace along the mid-dorsal line.

Eysocket measurement is the distance from the posterior margin of the eysocket to the margin of the carapace in a line straight back.

Abdomen length is the mid-dorsal length from the posterior margin of the carapace to the middle of the telson, exclusive of the median spine or hairs.

Tow 37-4a one larva with two posterior swimmerets. Carapace
4.5 m.m.

Eysocket 2.6 m.m.

| | | | | | | | |
|------------|------------|----------------------------|-----------|------------------|-----------|-------|----------|
| Tow 37-8a | 4th stage, | Carapace | 7.5 m.m. | Eysocket | 5.0 m.m. | Chela | 4.6m.m. |
| Tow 37-10a | " | " | 8.2 m.m. | " | 5.6 m.m. | " | 4.6m.m. |
| Tow 37-13a | 8nd | " | 5.0 m.m. | | | | |
| Tow 37-20a | " | " | 5.0 m.m. | " | 3.1 m.m. | | |
| Tow 37-28a | 4th | " | 7.1 m.m. | " | 5.0 m.m. | " | 4.0 m.m. |
| Tow 37-29a | 2nd | " | 4.5 m.m. | " | 3.05 m.m. | " | |
| Tow 37-34a | 3rd | " | 5.05 m.m. | " | 3.4 m.m. | " | 3.0m.m. |
| Tow 37-30a | 1st stage | Carapace (67 measurements) | 3.92 m.m. | O _{av.} | = | | |
| | | Eysocket (" ") | 2.35 m.m. | O _{av.} | = | | |
| | | Abdomen (11 ") | 3.76 m.m. | O _{av.} | = | | |

Lobster larva tows, Pictou, 1937

| DATE | TOW 57- | PLACE | TIME | TIDE | WIND | SKY %cloudy. | NETS | DEPTH | LARVAE | | | | REMARKS |
|---------|------------|----------------------|-------|------|--------|-----------------|------|---------|--------|-----|-----|-----|-------------------------|
| | | | | | | | | | 1st | 2nd | 3rd | 4th | |
| July 22 | 1a | Pictou Hbr | 15.25 | Fl. | E. | Clear | 1 | 3. | - | - | - | - | clear |
| " | 2a | off " | 16.25 | " | " | " | 1 | 3. | 0 | 1 | - | - | " " |
| " | 3a | " " | 16.35 | " | " | " | 1 | 3 fath. | - | - | - | - | " " |
| " | 4a | " " | 18.15 | " | " | " | 1 | 3 | 11 | - | - | - | dirty " |
| " | 5a | " " | 18.15 | " | " | " | 1 | 4 fath. | - | - | - | - | seaweed |
| " | 6a | " " | 19.45 | " | " | " | 1 | 3 | 6 | - | - | - | Sunset, full moon |
| " | 7a | " " | 19.45 | " | " | " | 1 | 3 fath. | - | - | - | - | " " |
| " | 8a | Chance Hbr | 21.35 | Ebb | N.W. | " | 1 | 3 | - | - | - | 1 | " " |
| " | 9a | " " | 21.35 | " | " | " | 1 | 3 fath. | - | - | - | - | " " |
| 24 | 10a | Pictou Hbr | 0.35 | " | " | " | 1 | 3 | - | - | - | - | 1 moonlight |
| " | 11a | " " | 0.35 | " | " | " | 1 | 3 fath. | - | - | - | - | net fouled |
| " | 12a | " " | 2.10 | " | " | " | 1 | 3 | - | - | - | - | moonlight |
| " | 13a | " " | 2.10 | " | " | " | 1 | 3 fath. | - | - | - | - | "(rise |
| " | 14a | " " | 5.00 | Fl. | " | 60% | 1 | 3 | 1 | - | - | - | after sun- |
| " | 15a | " " | 5.00 | " | " | " | 1 | 3 fath. | - | - | - | - | " " |
| " | 16a | " " | 6.35 | " | " | " | 1 | 3 | 11 | - | - | - | " " |
| " | 17a | " " | 6.35 | " | " | " | 1 | 3 fath. | - | - | - | - | " " |
| 26 | 18a | Little Hbr | 15.15 | Ebb | " | Haze | 1 | 3 | 4 | 1 | - | - | " " |
| " | 19a | " " | 16.15 | " | " | " | 1 | 4 fath. | - | - | - | - | " " |
| " | 20a | " " | 16.30 | " | " | " | 1 | 3 | 7 | 1 | - | - | " " |
| " | 21a | " " | 21.00 | Fl. | " | " | 1 | 3 | 0 | - | - | - | moonlight |
| " | 22a | " " | 21.00 | " | " | " | 1 | 3 fath. | 0 | - | - | - | " " |
| 27 | 23a | Pictou Hbr | | | | | 1 | 3 | - | - | - | - | mud, shell |
| 28 | 24a | " " | 3.20 | Ebb | N.S.W. | " | 1 | 3 | 2 | - | - | - | (rise |
| " | 25a | " " | 3.20 | " | " | " | 1 | 2 fath. | - | - | - | - | before su |
| " | 26a | " " | 6.00 | " | " | 100% | 1 | 3 | 0 | - | - | - | after " |
| " | 27a | " " | 6.00 | " | " | " | 1 | 2 fath. | 1 | - | - | - | " " |
| 29 | 28a | " " | 10.50 | Fl. | N.E. | 10% | 2 | 3 | 0 | - | - | - | " " |
| " | 29a | Little Hbr | 13.55 | Ebb | " | " | 2 | 3 | 2 | 1 | - | - | (shore. |
| " | 30a | " " | 16.00 | " | " | 2% | 2 | 3 | 31 | - | - | - | wind on- |
| " | 31a | Chance Hbr | 17.35 | " | " | 5% | 2 | 3 | 44 | - | - | - | " " |
| 30 | 32a | " " | 18.20 | Fl. | S.E. | 10% | 2 | 3 | - | - | - | - | "offshore |
| " | 33a | Pictou Is | 15.15 | " | " | 50% | 2 | 3 | 1 | - | - | - | "onshore |
| " | 34a | between 32 and 33 | 17.50 | Ebb | " | 100% | 1 | 3 | 1 | - | 1 | - | " " |
| " | 35a | " " | 17.50 | " | " | " | 1 | 2 fath. | 1 | - | 1 | - | " " |
| Aug. 2 | 36a | Pictou Hbr | 17.05 | Fl. | N. | 50% | 1 | 3 | 1 | - | - | - | net torn |
| " | 37a | " " | 17.05 | " | " | " | 1 | 3 fath. | 1 | - | - | - | " " |
| 3 | 38a | " " | 15.25 | " | S.W. | 80% | 1 | 3 | 1 | - | - | - | (shore |
| " | 39a | Pictou Is | 17.20 | " | " | 10% | 1 | 3 | 0 | 1 | - | - | wind on- |
| " | 40a | " " | 19.25 | " | " | 100% | 1 | 3 | 0 | - | - | - | 1 mil. offshore |
| " | 41a | " " | 20.50 | Ebb | " | 100% | 1 | 3 | 0 | - | - | - | dark, |
| 4 | | | | | | | | | | | | | rain same place as 39a. |
| 5 | 42a | Pictou Is. | 15.45 | Fl. | N. | 90% | 1 | 3 | 2 | - | - | - | (shore |
| " | 43a | " " | 17.35 | " | " | 80% | 1 | 3 | 38 | - | - | - | wind on |
| " | 44a | " " | 21.00 | " | " | 40% | 1 | 3 | 0 | - | - | - | 1 mile off/ |
| " | | | | | | | | | | | | | same |
| " | 45a | " " | 22.00 | " | " | " | 1 | 3 fath. | 2 | - | - | - | same as 44a |