

*Aedes aegypti* Handbook Series No. 6

OVIPOSITION TRAP REFERENCE HANDBOOK

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*Aedes aegypti* Eradication Program  
Atlanta, Georgia 30333

# OVIPOSITION TRAP REFERENCE HANDBOOK

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Throughout this handbook, the use of trade names and the names of suppliers of products is for identification purposes, only, and does not constitute endorsement by the Public Health Service.

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## INTRODUCTION

During the first three years of the *Aedes aegypti* Eradication Program, 1964 through 1966, surveys to determine the presence or absence of the yellow fever mosquito have been conducted largely by standard larval dipping methods or, less often, by means of adult mosquito biting collections. These are explained in detail in "Handbook of Mosquito Inspection Procedures." During this same period oviposition traps ("ovitrap") were developed and evaluated in the laboratory by the Biology/Chemistry Section of Technology Branch, CDC as described by Fay and Perry (1965), Fay and Eliason (1966) and others. Their work indicated that female *Aedes aegypti* were strongly attracted to black jars with water and laid eggs on paddles placed in these jars. During 1966 further field trials in southern Florida and other operating areas have indicated considerable promise for this technique in detecting the presence of adult yellow fever mosquitoes. During 1967 the oviposition traps will be field tested extensively in southern United States, Puerto Rico, and the U. S. Virgin Islands. This Training Handbook has been developed to aid field personnel in the use of the oviposition traps.

### OVIPOSITION TRAPS -- ("OVITRAPS")

The oviposition jar (Figure 1), made of Flint glass with smooth tapered sides, has a capacity of about one pint. It has an inside diameter at the top of about 3 inches and an overall height of about 5 inches. The outside of the jar is coated with a glossy, black, abrasion-resistant, ceramic paint (Hercules #24-288 of the Hercules Powder Co., or equivalent).

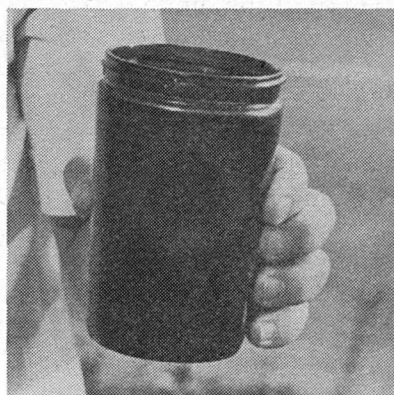


Figure 1. Oviposition jar.

The paddle (Figure 2), is made of hardboard about 3/4" wide and 5" long, with one side smooth and the other side rough.

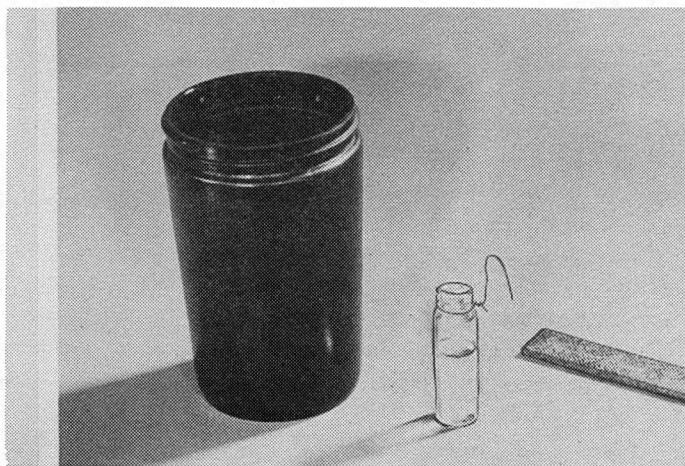


Figure 2. Parts of Ovitrap.

Originally, the ovitrap (Figure 2) consisted of 3 parts: the oviposition jar, the hardboard paddle, and a small vial containing ethyl acetate. Additional field work indicated that in many areas yellow fever mosquitoes laid eggs on paddles as frequently in jars without, as with, the vial of ethyl acetate. Therefore, in 1967 the decision has been made to use the ovitrap routinely without the vial of ethyl acetate except in special study areas.



Water is added to the jar to a depth of about an inch. The paddle is attached with a clip to the side of the jar in a vertical position and the jar placed in the field. Female *Aedes aegypti* are attracted to the ovitrap and eggs are laid on the paddle close to the water line.

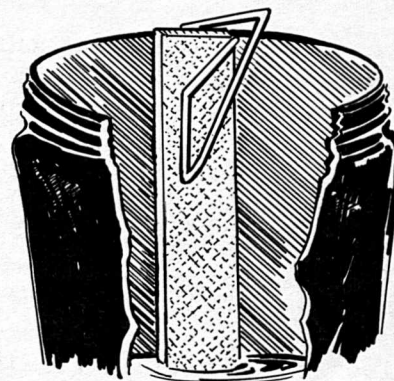


Figure 3 (right). Paddle clipped inside of jar.

### PREPARING THE GRID MAP

Prior to field work, grids should be plotted on maps of the area in which ovitraps will be used. In general, grids will be more easily read if marked on maps of individual zones. Since zone maps often are not scaled, it will be necessary in most cases to interpolate distances from an area map with a known scale to the same points on the zone map. On the zone map (Figure 5) on the next page, the distance from Point A to Point B is 8400 feet according to the scale given on the area map. If ovitraps are to be spaced 350 feet apart, it can be calculated that the grid marks should be  $\frac{3}{8}$  inch apart. Grids should be calculated to the nearest  $\frac{1}{16}$  of an inch. In the above example, the calculations are made as follows:

- (a)  $8400 \div 350$  feet = 24 (grid marks, or trap sites)
- (b) Distance between points A and B on zone map =  $9\frac{1}{2}$  inches or  $\frac{152}{16}$  inches
- (c)  $\frac{152}{16}$  inches  $\div$  number of grid marks (24) =  $\frac{6.33}{16}$  (or  $\frac{3}{8}$  inch)

Therefore, there should be  $\frac{3}{8}$  inch between each grid mark on the map.

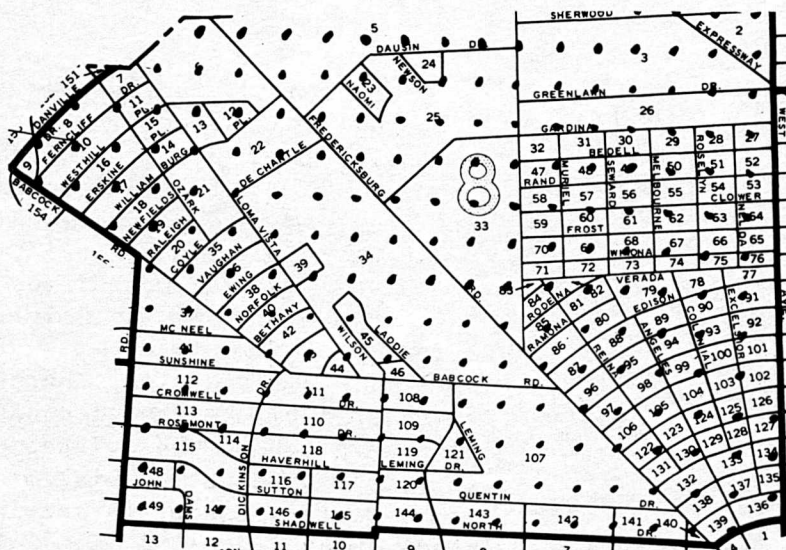
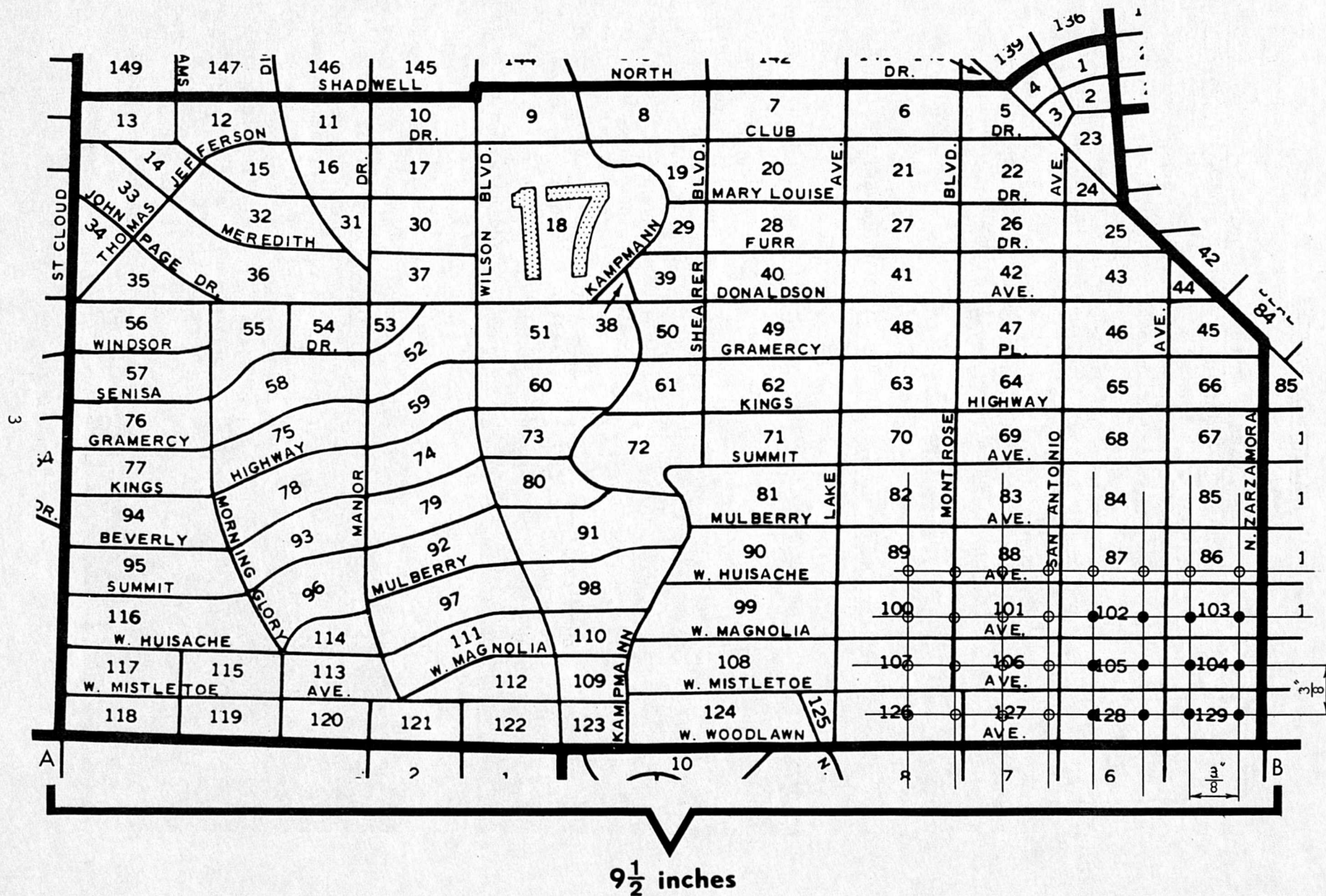


Figure 4. A grid map. The AAE Program will furnish a number of sizes of perforated plastic grids for making these maps.



Figure 5. A zone map such as this is used to calculate grid points.



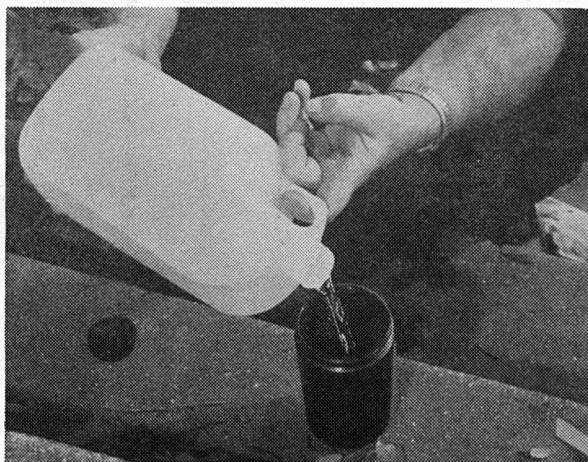
### MARKING OF PADDLES



Figure 6. Marked paddle.

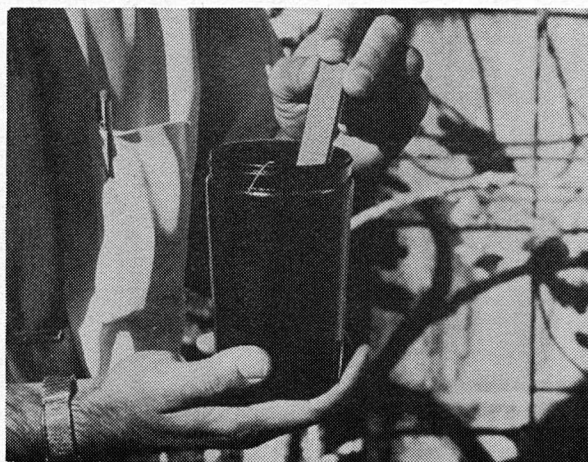
The paddle (Figure 6) should be marked on the smooth side with an orange or yellow wax marking pencil, with three numbers: the first number showing the zone number; the second, paddle number; and the third, the week of the year. Thus, the numbers on the paddle in Figure 6, indicate that the ovitrap was placed in zone 1, was the fifth paddle in that zone, and was placed during the 20th week in the year. The first two numbers will not change during the time the ovitrap is in use but the week-of-the-year number will advance consecutively as weekly counts are made.

### SETTING UP OF OVITRAP FOR FIELD PLACEMENT



Water is added to the ovitrap (Figure 7) to a depth of approximately one inch, though it may sometimes be necessary to add more than this. Research has shown that too much water detracts from the trap's effectiveness. Ethyl acetate is no longer recommended for routine use as an attractant with ovitraps, although it may be used in special research studies.

Figure 7. Adding water to ovitrap.



The paddle is then placed in the jar (Figure 8) so the smooth side with the identifying numbers is next to the side of the jar and the rough side faces the center of the jar. The paddle is clipped in place in a vertical position with the lower end submerged in the water.

Figure 8. Placing the paddle.



## OVITRAP SITES

A reconnaissance type of survey is made of the area (Figure 9) to guide the inspector in determining the most desirable trap locations as indicated by the grid map.

Figure 9



The inspector should contact the householder (Figure 10) and explain the desirability of placing the ovitrap in a protected place. It is recommended that the jar be ready for placement when permission is obtained to assure the householder that no poisonous or harmful chemicals are involved. The owner should also be advised at this time that return visits for trap inspections will be made periodically.

Figure 10



In selecting the site for the ovitrap on a premises, the following requirements should be observed:

- a. Place it close to other potential breeding containers (Figure 11).

Figure 11

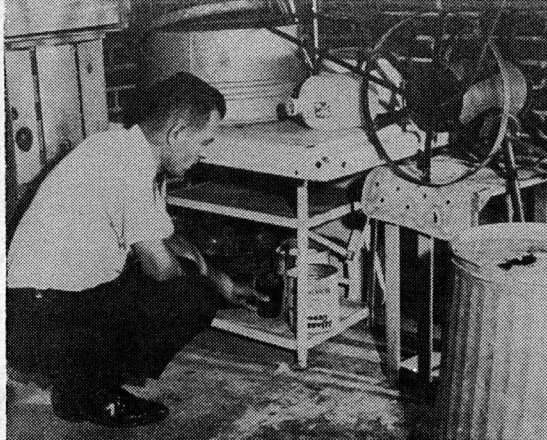


- b. Place it in partial or total shade. Avoid placing it in direct sunlight (Figure 12).

Figure 12







- c. Place the ovitrap in a protected place (Figure 13), if at all possible, and in a situation where it will not be disturbed by children or pets.

Figure 13. Ovitrap in a protected place.



- d. Place the ovitrap at ground level (Figure 14). Do not suspend the trap from a bush or place it on a ledge.
- e. Place the ovitrap at the rear of the premises (Figure 15) rather than in the front yard or near the street. Selection of a location at the side of the premises may facilitate weekly checking of the traps.

Figure 14. Placed at ground level.



Figure 15. Placed at the rear of the premises.



- f. Place the oviposition jar close to a typical adult mosquito resting site such as shrubbery (Figure 16), piles of old tires, or accumulations of trash or junk.
- g. Avoid locations that receive excess drainage from overhead, as from eaves or downspouts or broadleaf vegetation.
- h. As you place the ovitraps, immediately record each one on the AAEP Ovitrap Location Record form (see opposite).

Figure 16. Placed close to adult mosquito resting places.

## RECORDING OVITRAP PLACEMENTS

Form PHS 2.39 (AAEP Ovitrap Location Record) will be used for recording ovitrap sites. This form must always include the block number, obtained from the zone grid map, to help in locating each trap. The actual trap location description should be as short and precise as possible, yet permit ready finding of the trap. All locations will be noted in relation to the direction one enters the premises, such as "L (left) rear yard, under lumber pile", "R (right) rear, under porch". Additional copies of completed Form PHS 2.39 will be made and kept available in the Area office in event that the original is lost.

[illegible]

PHS 2.39, AAEP Ovitrap Location Record





Figure 17, above.

Figure 18, below.



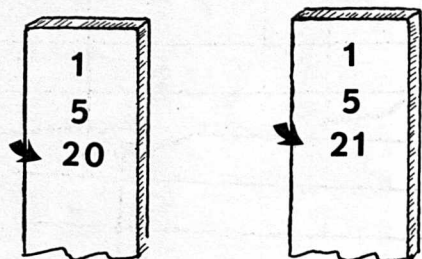
## WEEKLY OVITRAP INSPECTIONS

The ovitrap can be set out and left in place indefinitely. Checking or re-servicing the trap should be done at 7-day (weekly) intervals.

At each weekly inspection of the ovitrap: the exposed paddle (Figure 17) is removed and placed singly in a plastic bag for carrying to the office for examination. The paddle should not be handled in a manner which permits transfer of eggs from one paddle to another.

The ovitrap is examined and cleaned of accumulated debris such as sticks and leaves so that oviposition is limited to the paddle. The water level (Figure 18) is adjusted to the original one inch level either by pouring out excess rain water or adding water.

The new paddle (Figure 19) is marked and placed in the oviposition jar (Figure 20). The new paddle will be given the same first two numbers for zone and trap number, as the one it replaces, but the third number, for the week of placement, will usually be one greater. A sheet with the "Schedule of Weeks" for 1967 is given on page 9.



Old paddle

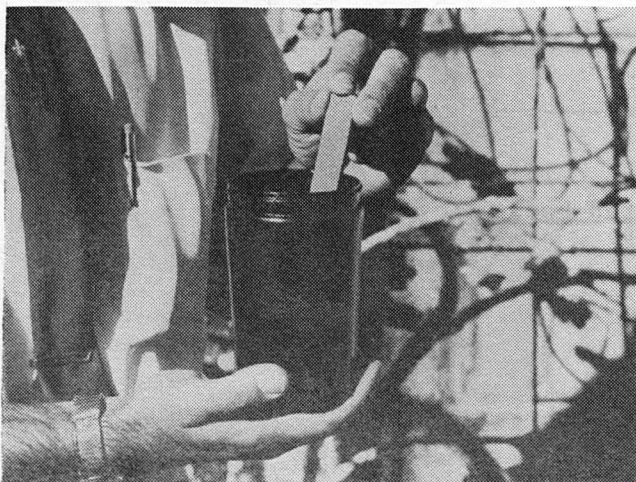
New paddle

Figure 19.

Paddles returned for examination from different zones should be kept separated to assist the examiner in maintaining his records.

The inspector will list the traps which were broken, jar or paddle or both missing, dumped over, etc. and check the appropriate space on the Ovitrap Problem Sheet (see page 11). This information is brought to the paddle examiner along with the paddles collected so that the information may be transferred to the oviposition record form.

Left: Figure 20.





**AEDES AEGYPTI ERADICATION PROGRAM**  
**SCHEDULE OF WEEKS - 1967**

Wk. No.	JANUARY M T W TH F S	Wk. No.	APRIL M T W TH F S	Wk. No.	JULY M T W TH F S	Wk. No.	OCTOBER M T W TH F S
1	2 3 4 5 6 7	14	3 4 5 6 7 8	27	3 4 5 6 7 8	40	2 3 4 5 6 7
2	9 10 11 12 13 14	15	10 11 12 13 14 15	28	10 11 12 13 14 15	41	9 10 11 12 13 14
3	16 17 18 19 20 21	16	17 18 19 20 21 22	29	17 18 19 20 21 22	42	16 17 18 19 20 21
4	23 24 25 26 27 28	17	24 25 26 27 28 29	30	24 25 26 27 28 29	43	23 24 25 26 27 28
5	30 31			31	31	44	30 31
FEBRUARY		MAY		AUGUST		NOVEMBER	
5	1 2 3 4	18	1 2 3 4 5 6	31	1 2 3 4 5	44	1 2 3 4
6	6 7 8 9 10 11	19	8 9 10 11 12 13	32	7 8 9 10 11 12	45	6 7 8 9 10 11
7	13 14 15 16 17 18	20	15 16 17 18 19 20	33	14 15 16 17 18 19	46	13 14 15 16 17 18
8	20 21 22 23 24 25	21	22 23 24 25 26 27	34	21 22 23 24 25 26	47	20 21 22 23 24 25
9	27 28	22	29 30 31	35	28 29 30 31	48	27 28 29 30
MARCH		JUNE		SEPTEMBER		DECEMBER	
9	1 2 3 4	22	1 2 3	35	1 2	48	1 2
10	6 7 8 9 10 11	23	5 6 7 8 9 10	36	4 5 6 7 8 9	49	4 5 6 7 8 9
11	13 14 15 16 17 18	24	12 13 14 15 16 17	37	11 12 13 14 15 16	50	11 12 13 14 15 16
12	20 21 22 23 24 25	25	19 20 21 22 23 24	38	18 19 20 21 22 23	51	18 19 20 21 22 23
13	27 28 29 30 31	26	26 27 28 29 30	39	25 26 27 28 29 30	52	25 26 27 28 29 30

In most areas it will also be necessary periodically to replace jars since evaporation of water over a period of time will effect a deposit of salts on the sides which will serve as a good oviposition site. Jars should also be checked weekly to be sure that hatching of eggs has not occurred. Dirty jars or those with larvae should be replaced with clean jars as soon as possible. Jars are most easily cleaned by scrubbing with a round toilet-bowl brush or equivalent, using a household detergent solution. Jars should be thoroughly rinsed with clean water.

#### EXAMINATION OR READING OF PADDLES

It is recommended that one person be assigned to read paddles gathered by specific inspectors or in certain zones. Such a person will be able to detect possible errors more readily than one not familiar with certain zones or the paddles handled by certain individuals.

Paddles should be checked under the low power of a dissecting microscope. *Aedes aegypti* and other species have shown a preference for depositing their eggs in the indentations on the rough side of the paddle and on the edges of the paddles (see figure 21). These surfaces should be examined carefully. A superficial examination of the smooth side of the paddle should readily detect eggs that have been deposited there.

Negative and positive paddles should be kept separated. A recheck by qualified, trained personnel (foremen, assistant or area supervisor, or other examiners) should be made of approximately 10 percent of the paddles found negative by a given examiner. Positive paddles may be disposed of by burning, burying, or other convenient means which will prevent reintroduction of the eggs into the eradication environment.

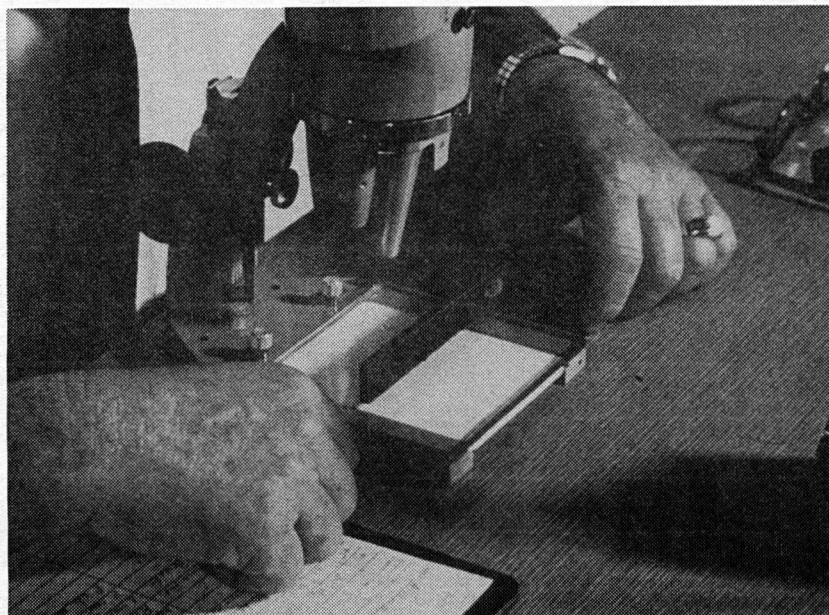


Figure 21. An ovitrap paddle is examined under the low power of a dissecting microscope.



County Hillsborough

Trap Week No. 9

Inspector S. Jones

[illegible]



## IDENTIFICATION OF EGGS

Handling paddles as previously recommended will facilitate the identification of eggs by minimizing egg collapse due to rapid drying of the paddles.

With a little training and practice, the relatively longer, narrower, smoother eggs of *aegypti* can be distinguished from the relatively shorter, broader, rougher eggs of *triseriatus* (see Figures 23 and 24). This is particularly true where paddles have been properly handled and the eggs identified as soon after paddle collection as possible. The eggs of *aegypti* and *triseriatus* are fastened by the mucilaginous exochorion to the surface on which they are laid. After studying these figures, turn to Appendix A (page 23) and test your ability to differentiate between the eggs of *aegypti* and *triseriatus*.

The eggs of *Aedes aegypti* and *Ae. atropalpus* are more difficult to separate. In general, eggs of *atropalpus* are slightly wider near one end, more pear-shaped (see Figure 22), than those of *aegypti*, which have somewhat parallel sides and are more cigar- or torpedo-shaped. These characters are not always evident, particularly if the eggs have collapsed somewhat. The eggs of *atropalpus* are not glued or fastened to the surface on which they are laid. They can be teased or moved by gently touching them with a needle or pin. Positive identification can be made by hatching the eggs and using the key to first stage larvae and the illustrations in Appendix B, pages 27-33, or by allowing the larvae to grow to the second or a later instar and identifying them on the basis of shape and number of comb scales on the eighth abdominal segment.

Based on limited material available from the Virgin Islands and Puerto Rico, the eggs of *mediovittatus* appear duller and grayer, with finer markings on the egg shell, or endochorion, than those of *aegypti* which are more shiny, blacker, and with more evident reticulations on the egg shell. No information is available with regard to eggs of *Aedes zoosophus* at the present time.

Slides and other aids to help in distinguishing these container-breeding species of *Aedes* are available from the Training and Consultation Section, AAEP.

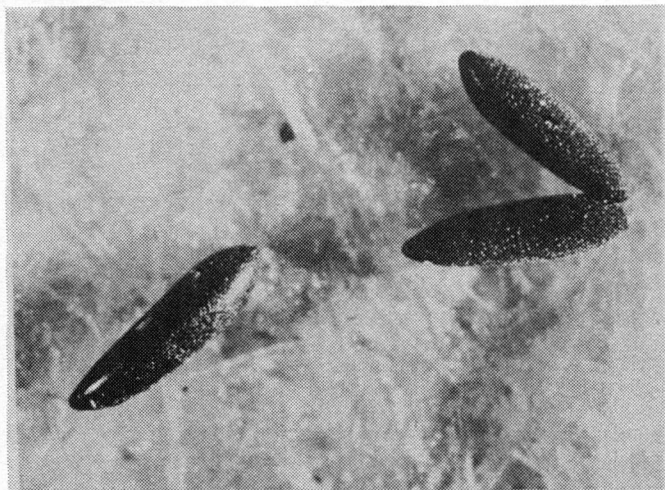


Figure 22. Eggs of *Aedes atropalpus*. Note that these eggs are slightly wider near one end than those of *aegypti*, but not as rough as those of *triseriatus*, Figure 24.



Figure 23. Eggs of *Aedes aegypti*. Note that these are relatively longer and smoother than those of Aedes triseriatus below.

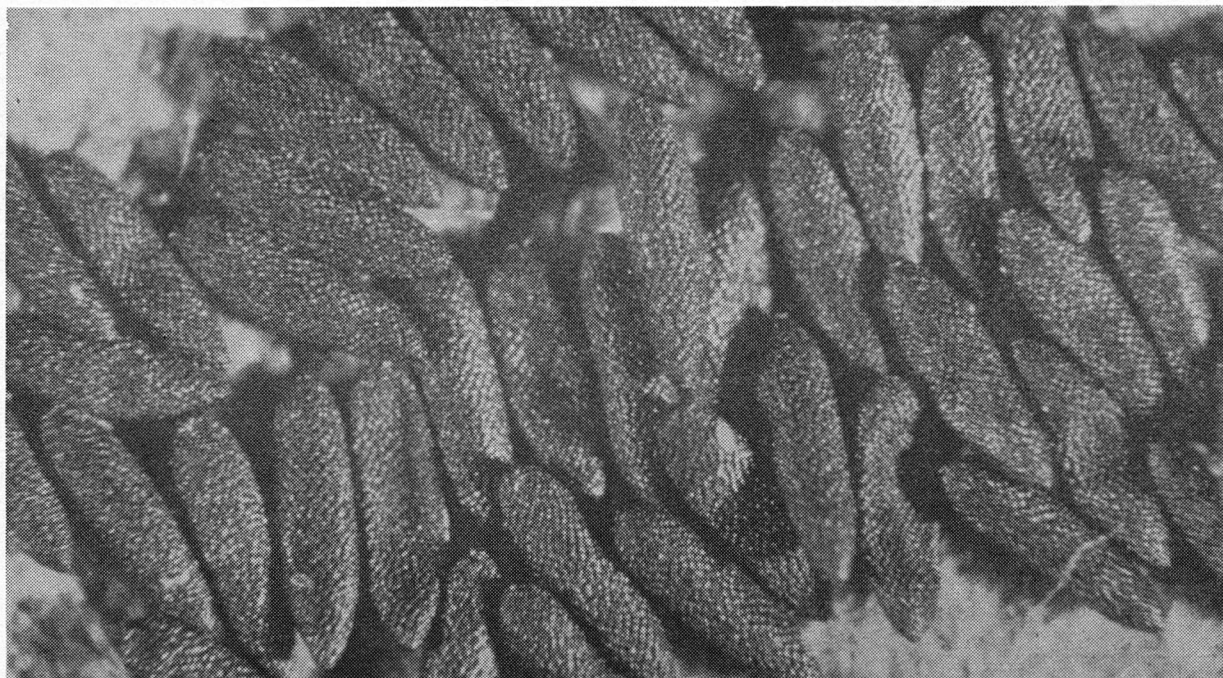


Figure 24. Eggs of Aedes triseriatus. Note that these are relatively broader and rougher (rough like a raspberry) than the eggs of *Aedes aegypti* above.



## RECORDING INFORMATION

### Placement of Traps

AAEP Ovitrap Location Record - PHS 2.39. The inspector who places traps records the sites of their placement on the form PHS 2.39 (see page 7) and turns in the completed forms promptly. The area supervisor or the assistant area supervisor uses the information contained on the forms PHS 2.39 from the various zones to make up the Zone Master Transmittal form (discussed next). In the Area office, additional copies of the AAEP Ovitrap Location Record will be made and kept available, for use by supervisory personnel and also in case the original is lost.

Using the Ovitrap Location Record reports, the area supervisor or the assistant area supervisor prepares the Zone Master Transmittal - Oviposition Trap Placement - PHS 2.48. This form must then be transmitted IMMEDIATELY to Project Headquarters, where it is used to programme the automatic data processing (ADP) machines. No tabulations can be made of weekly data from the study areas until the ADP machines have been thus programmed. The Zone Master Transmittal is submitted only once unless changes are made in a study area or additional areas of study are set up.

The following explanations will help in making out this form (see illustration opposite).

Week Number refers to the time ovitrap placement was completed for the zone. It is obtained from the Schedule of Weeks - 1967 (see page 9) on the basis of the last date recorded for the given zone on the Ovitrap Location Record, PHS 2.39 for that zone.

Highest Trap Number Used is included to prevent confusion should some traps be pulled out or others added at a later date. If, for example, the grid size is changed and some of the traps are removed, the number of remaining traps in the zone may be reduced while the highest trap number remains the same (see example, page 18). In such a case, a new Zone Master Transmittal PHS 2.48 showing the changes that have been made will be forwarded to Headquarters immediately.

Ethyl Acetate refers to the use or the non-use of ethyl acetate as an attractant. Complete the column by using Y for yes or N for no.

### Operation of Traps

On his weekly inspections of the ovitraps, the inspector collects information in two forms: (1) the paddles; and (2) the Ovitrap Problem Sheet - PHS 2.41, which he fills out as he goes along (see pages 8 and 11). The paddles and the Problem Sheets are submitted together to the area office, where the paddles are examined under the microscope to determine whether any mosquito eggs are present. Results of the examination, together with data from the Problem Sheets, are used by the area office to prepare a weekly report to Program Headquarters.



AAEP OVITRAPS

Date April 12, 1967ZONE MASTER TRANSMITTAL

Name Florida      Name Tampa      Name Hillsborough  
 STATE: Number 03      AREA: Number 03      COUNTY: Number 003

Week Number	Zone	No. Traps In Zone	Grid (ft.)	Ethyl Acetate	Highest Trap No. Used
3	1	143	350	N	143
3	2	122	350	N	122
3	3	136	350	Y	136
3	4	143	350	N	143
3	5	198	350	N	198
3	6	202	350	N	202
3	7	136	350	N	136
3	8	147	350	N	147
3	9	173	350	N	173
3	10	129	350	N	129
4	11	156	350	Y	156
4	12	133	350	N	133
4	13	111	350	N	111
4	14	197	350	N	197
4	15	97	350	N	97
4	16	65	350	N	65
<b>4</b>	<b>17</b>	<b>145</b>	<b>350</b>	<b>N</b>	<b>145</b>
4	18	121	350	N	121
4	19	86	350	N	86
4	20	98	350	N	98
4	21	133	350	N	133
4	22	127	350	Y	127
4	23	172	350	N	172
4	24	101	350	N	101
4	25	93	350	N	93

PHS 2.48 (NCDC)  
6-67

STATE Florida AREA Tampa  
WEEK 9 IDENTIFIER J. Smith

COUNTY Hillsborough  
PAGE 1 OF 2

PHS 2.38 (NCDC)  
1-67

**AEDES AEGYPTI ERADICATION PROGRAM**

**OVIPOSITION TRAP INSPECTION FORM**

0	1	2	3	4	5	6	7	8	9
0	1	2	3	4	5	6	7	8	9
7	0	1	2	3	4	5	6	7	8

ALL TRAPS NEGATIVE

Make your mark with a No. 2 lead pencil. Erase completely any marks changed.

0	1	2	3	4	5	6	7	8	9
0	1	2	3	4	5	6	7	8	9
0	1	2	3	4	5	6	7	8	9
1	0	1	2	3	4	5	6	7	8

FINDINGS

LIGHT AEGYPTI AP	HEAVY AEGYPTI AT	NO READING	OTHER EGGS
------------------	------------------	------------	------------

0	1	2	3	4	5	6	7	8	9
0	1	2	3	4	5	6	7	8	9
0	1	2	3	4	5	6	7	8	9
7	0	1	2	3	4	5	6	7	8

FINDINGS

LIGHT AEGYPTI AP	HEAVY AEGYPTI AT	NO READING	OTHER EGGS
------------------	------------------	------------	------------

0	1	2	3	4	5	6	7	8	9
0	1	2	3	4	5	6	7	8	9
0	1	2	3	4	5	6	7	8	9
2	0	1	2	3	4	5	6	7	8

FINDINGS

LIGHT AEGYPTI AP	HEAVY AEGYPTI AT	NO READING	OTHER EGGS
------------------	------------------	------------	------------

0	1	2	3	4	5	6	7	8	9
0	1	2	3	4	5	6	7	8	9
0	1	2	3	4	5	6	7	8	9
8	0	1	2	3	4	5	6	7	8

FINDINGS

LIGHT AEGYPTI AP	HEAVY AEGYPTI AT	NO READING	OTHER EGGS
------------------	------------------	------------	------------

0	1	2	3	4	5	6	7	8	9
0	1	2	3	4	5	6	7	8	9
0	1	2	3	4	5	6	7	8	9
4	0	1	2	3	4	5	6	7	8

FINDINGS

LIGHT AEGYPTI AP	HEAVY AEGYPTI AT	NO READING	OTHER EGGS
------------------	------------------	------------	------------

0	1	2	3	4	5	6	7	8	9
0	1	2	3	4	5	6	7	8	9
0	1	2	3	4	5	6	7	8	9
1	0	1	2	3	4	5	6	7	8

FINDINGS

LIGHT AEGYPTI AP	HEAVY AEGYPTI AT	NO READING	OTHER EGGS
------------------	------------------	------------	------------

0	1	2	3	4	5	6	7	8	9
0	1	2	3	4	5	6	7	8	9
0	1	2	3	4	5	6	7	8	9
5	0	1	2	3	4	5	6	7	8

FINDINGS

LIGHT AEGYPTI AP	HEAVY AEGYPTI AT	NO READING	OTHER EGGS
------------------	------------------	------------	------------

0	1	2	3	4	5	6	7	8	9
0	1	2	3	4	5	6	7	8	9
0	1	2	3	4	5	6	7	8	9
3	0	1	2	3	4	5	6	7	8

FINDINGS

LIGHT AEGYPTI AP	HEAVY AEGYPTI AT	NO READING	OTHER EGGS
------------------	------------------	------------	------------

0	1	2	3	4	5	6	7	8	9
0	1	2	3	4	5	6	7	8	9
0	1	2	3	4	5	6	7	8	9
6	0	1	2	3	4	5	6	7	8

FINDINGS

LIGHT AEGYPTI AP	HEAVY AEGYPTI AT	NO READING	OTHER EGGS
------------------	------------------	------------	------------

0	1	2	3	4	5	6	7	8	9
0	1	2	3	4	5	6	7	8	9
0	1	2	3	4	5	6	7	8	9
7	0	1	2	3	4	5	6	7	8

FINDINGS

LIGHT AEGYPTI AP	HEAVY AEGYPTI AT	NO READING	OTHER EGGS
------------------	------------------	------------	------------



The Oviposition Trap Inspection Form - PHS 2.38 (see illustration opposite) is the weekly report from the area to Program Headquarters in Atlanta. It is designed to report data in such a manner that it can be used by the ADP machines. Through the use of the ADP system, the Aedes aegypti Eradication Program can accumulate, organize, and store a tremendous amount of information that can be quickly recalled, in whole or in part as needed.

The Oviposition Trap Inspection Form must be filled out each week. The report is prepared by the area supervisor or the assistant area supervisor using data from paddle examinations and from the Ovitrap Problem Sheet. Each week it must include every zone that has been included on a Zone Master Transmittal and is therefore a part of the ADP programming.

In filling out the Oviposition Trap Inspection Form (see opposite), as noted near the top of the form, all marks are to be made with a No. 2 lead pencil and any erasures should be complete. Mark firmly but not with such force that a hole is made in the form. Be sure to fill in the name of the State, the area, and the county.

Week refers to the week number shown on the paddle or recorded on the Ovitrap Problem Sheet (PHS 2.41), which the inspector obtained from the Schedule of Weeks - 1967 (see page 9).

Identifier gives his or her name in the space provided. Page of      should be filled in (for example, page 1 of 2) so that Headquarters can tell whether all forms for a particular week and zone have been received.

In the section of the form labelled ZONE, use arabic numerals to record the zone number in the three small blocks arranged vertically at left. If there is only one digit in the zone number, place zeros ahead of it to make it a 3-digit number, for example: zone 4 would be written 004; and zone 9 would be written 009. Zone numbers of two digits will require one zero to make them 3-digit numbers, for example: zone 17 would be written 017; and zone 98 would be written 098. Needless to say, zone numbers of three digits do not require the zeros. In addition to writing the zone number in the little blocks, the matching digits printed in the ZONE section should be marked through, as in the sample form opposite.

The space provided under the ZONE information shown as all traps negative === is to be marked only when all traps in a zone are negative and there were no missing or unreadable paddles.

Spaces are provided for 10 paddle readings on each page. Remember, only positive or missing paddles are recorded. Each part labelled TRAP NUMBER should be marked in the little blocks to the left in the manner previously described for the Zone information, for example, trap number 7 would be recorded as 0007 and the corresponding digits marked; trap number 139 as 0139 and the appropriate digits marked in the spaces to the right (see the example opposite).

Under FINDINGS, the appropriate space(s) should be marked in the manner

...to page 19

Date 7/20/67

Name Texas Name San Antonio Name Bexar  
STATE: Number 10 AREA: Number VII COUNTY: Number 029

Week Number	Zone	No. Traps In Zone	Grid (ft.)	Ethyl Acetate	Highest Trap No. Used
12	23	89	700	No	178
12	24	102	700	No	204

*Transmittal after change in grid ring*

Transmittal after change  
in grid size

Date 3/24/67

Name Texas Name San Antonio Name Bexar  
STATE: Number 10 AREA: Number VII COUNTY: Number 029

[illegible]

Original transmittal.

PHS 2.48 (M  
6-67

The forms pictured here represent the results of a change in the grid size in one area. A new Zone Master Transmittal PHS 2.48 dated 7/20/67 was submitted to Headquarters to update the information given on 3/24/67. Note that although there are now only half as many ovitraps as there were at the outset, the figures in the column headed "Highest Trap No. Used" remain the same (see text page 14).



...from page 17

shown in the illustration. Only positive and missing or unreadable paddles are to be recorded. The terms used in the form and their assigned meanings are as follows:

- Light *aegypti* - Paddles with 9 or fewer *aegypti* eggs.
- Heavy *aegypti* - Paddles with 10 or more *aegypti* eggs.
- A. P. - Aedes atropalpus - No counting necessary.
- A. T. - Aedes triseriatus - No counting necessary.
- A. M. - Aedes mediovittatus - No counting necessary. Applicable primarily to Puerto Rico and the Virgin Islands.
- Other eggs - Any other mosquito eggs.\*
- No reading - Jar, paddle, or both missing; or the paddle cannot reasonably be read due to excessive contamination. Traps repeatedly reported missing should be moved to a new site, preferably only a premises or two to one side so that the grid pattern is maintained.

In cases where the ovitrap has been broken or overturned but the paddle is present and is found positive, this information should be recorded in the proper place on Form PHS 2.38, such as "light aegypti," "heavy aegypti," or "A.T." (for Aedes triseriatus). It should not be recorded as "no reading," or as both positive and "no reading."

The form should be checked for completion and errors by the assistant area supervisor or the area supervisor before it is submitted. Copies may be desired for area office use if the supervisor does not wish to record the positives in another manner. Only completed zonal information should be submitted. Summaries of submitted data will be available to the area about a week after receipt of forms in Atlanta.

When submitting the completed forms to Headquarters, it is absolutely necessary that they be separated according to the week number to which the data apply. Data covering several zones for a given week should be submitted together; any information covering several weeks, even for a given zone, should be separated and submitted according to week number. Strict adherence to this procedure will prevent a lot of unnecessary handling and possible errors in tabulating data.

...to page 21

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\*Eggs that are difficult to identify should be referred to the Evaluation Officer in the State, or to the Chief, Training and Consultation Section in Atlanta. The eggs, still on the paddles, should be sent in plastic bags, properly packed, with pertinent data, in a mailing tube or other suitable strong container.

AEDES AEGYPTI  
ERADICATION PROGRAM

OVI TRAP INSPECTION REPORTING

REPORT DATE 03/14/67

TRAP STATUS REPORT  
FOR WEEK 09/1967

WEEK NUMBER OF REPORT 11 1967

STATE - FLORIDA

AREA - TAMPA

COUNTY - HILLSBOROUGH

ZONE NUMBER - 017

TRAP NUMBER	POSITIVE AEDES AEGYPTI	DENSITY AEDES AEGYPTI	OTHER AEDES EGGS FOUND			NON AEDES EGGS	GRID SIZE - 0350 ACETATE - NO
			A. M.	A. P.	A. T.		
0001	+	LIGHT					
0002	+	HEAVY					
0004	NO READING						
0005					+		
0006	+	LIGHT			+		
0007	+	HEAVY					
0008	NO READING						
0010	+	LIGHT					
0076	+	HEAVY					
0139	+	LIGHT					

TRAPS IN ZONE	TRAPS NOT READ		TRAPS READ NO.	TOTAL WITH AEDES AEGYPTI		DENSITY AEDES AEGYPTI		TRAPS WITH OTHER EGGS FOUND			REPORTS MARKED IN ERROR		
	NO.	PCT		NO.	PCT	LIGHT NO.	HEAVY PCT	A. M.	A. P.	A. T.	NON AEDES	NO.	PCT
145	2	01	143	7	05	4	57	3	43		2		00

AEDES AEGYPTI  
ERADICATION PROGRAM

OVIPOSITION TRAP INSPECTION REPORT  
POSITIVE OR UNREAD TRAP STATUS SUMMARY FOR WEEK 09 1967

REPORT DATE 03/14/67  
WEEK NUMBER OF REPORT 11 1967

STATE FLORIDA

AREA TAMPA

COUNTY HILLSBOROUGH

ZONE NO.	TRAPS IN ZONE	TRAPS NOT READ		TRAPS READ NO.	TOTAL WITH AEDES AEGYPTI		LIGHT AEDES NO.	DENSITY AEGYPTI PCT	HEAVY AEDES NO.	DENSITY - AEGYPTI PCT	NUMBER OF OTHER EGGS FOUND-			GRID SIZE	ACE- TATE	TRAPS IN ERROR	
		NO.	PCT		A.M.	A.P.					A.T.	NON- AEDES					
015	0097	0002	02	0095	0000	00	0000	00	0000	00	0000	0000	0000	0003	0500	NO	0000
016	0065	0001	01	0064	0000	00	0000	00	0000	00	0000	0000	0000	0001	0500	NO	0000
017	0145	0002	01	0143	0007	05	0004	57	0003	43	0000	0000	0002	0000	0350	NO	0000
018	0121	0004	03	0117	0011	09	0005	56	0004	44	0000	0000	0003	0004	0400	NO	0000
019	0086	0006	07	0079	0003	04	0002	67	0001	33	0000	0000	0001	0001	0400	NO	0000



...from page 19

The data forms (PHS 2.38), separated by week number, should be sent via air mail to:

National Communicable Disease Center  
Atlanta, Georgia 30333  
Attn: Aedes aegypti Eradication Program  
Operations Section, Reports Unit

In order to facilitate scheduling with the ADP Section of the Center, data forms should be submitted at regular intervals, e.g., no later than closing time on Tuesday of each week. Zonal data not completed by this time would be included with the next batch, but again, must be separated by week number.

Reports for areas in which hatching of eggs is required will, of necessity, be somewhat delayed but should assume a regular pattern until difficulties in egg identification have been overcome.

Within approximately a week after the completed PHS 2.38 forms are received at Headquarters, the results of combining the weekly oviposition data will be sent to the Area and Project offices concerned. The results of the ADP tabulations will be displayed in the following output documents:

Trap Status Report  
Trap Status Summary  
Area Totals  
County Totals  
State Totals

The first two of these are shown (greatly reduced) in the accompanying illustration (see opposite).

### SUPERVISION

Continuing checks on placements and servicing of ovitraps is essential, especially during the period in which personnel are being familiarized with this new tool. The foreman or other supervisory person making this check should primarily determine that:

- (a) The grid is being maintained as closely as possible.
- (b) Trap locations are suitable, based on the guidelines provided herein.
- (c) Traps are being properly and regularly serviced.

It is recommended that ten percent of the ovitraps in a given area be checked for proper placement and maintenance each week. This should be done in a manner that will cover a representative number of the traps from throughout the area. On succeeding weeks, different traps will be checked so that all traps are subject to continued rechecking periodically.

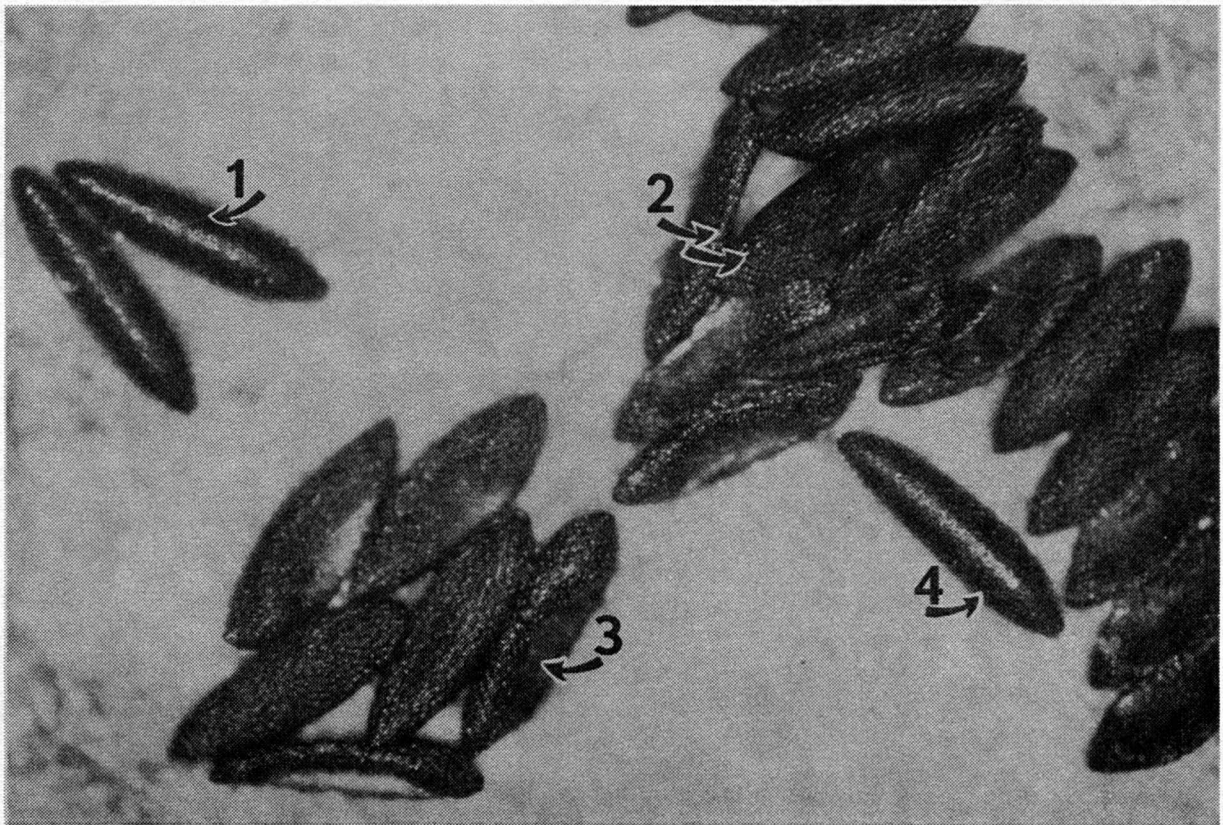
### SELECTED REFERENCES

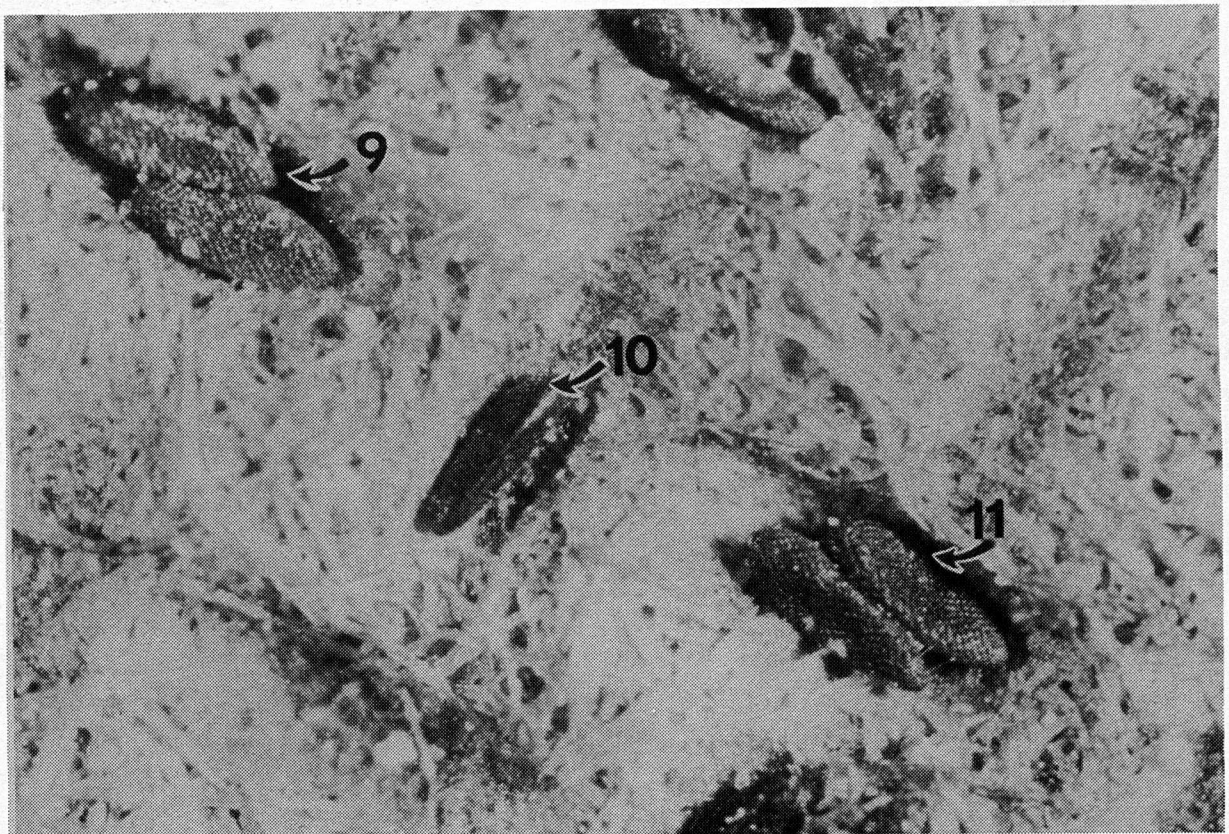
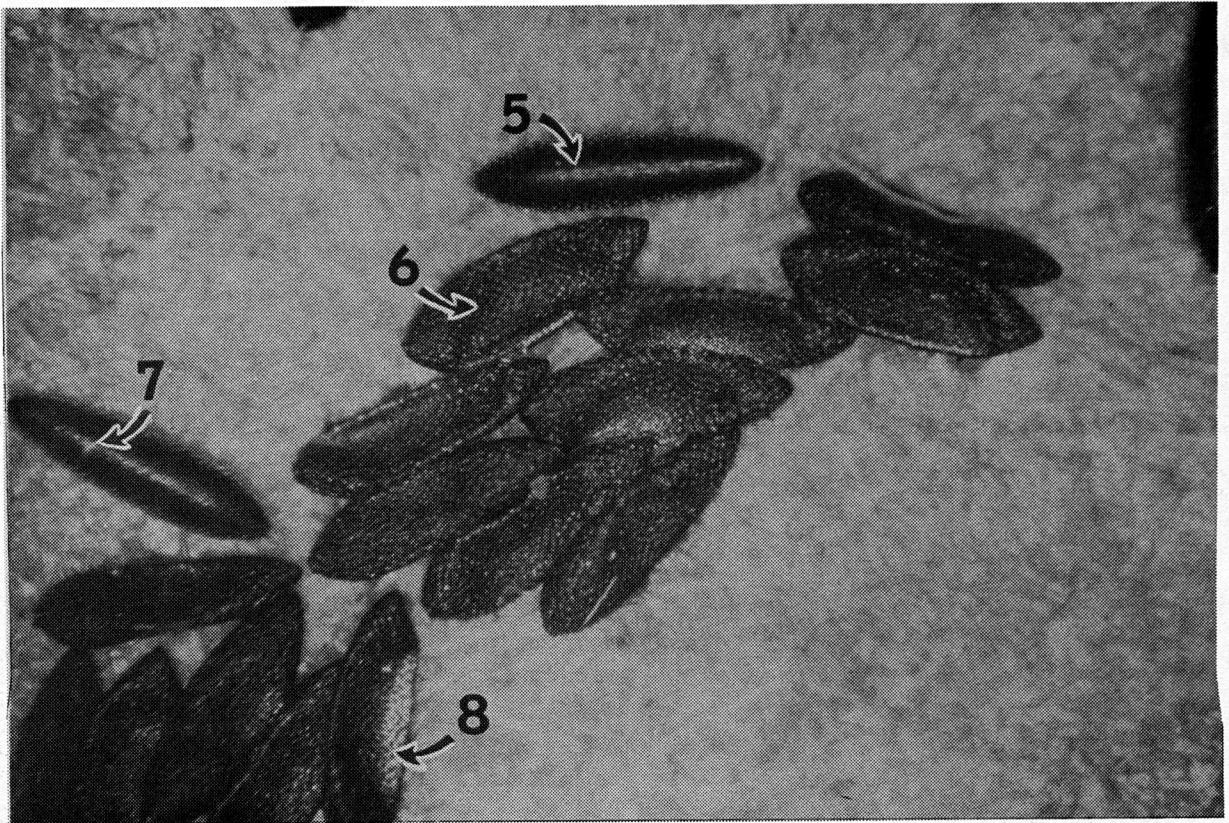
- Fay, R. W. and A. S. Perry. 1965. Laboratory studies of ovipositional preferences of Aedes aegypti. Mosq. News 25 (3): 276-281.
- Fay, R. W. and D. A. Eliason. 1966. A preferred oviposition site as a surveillance method for Aedes aegypti. Mosq. News 26 (4): 531-535.
- Pratt, H. D., K. S. Littig, and D. D. Bonnet. 1966. Handbook of mosquito inspection procedures. Aedes aegypti Handbook Series No. 4, CDC, PHS, USDHEW, Atlanta, Ga., 19 pp.



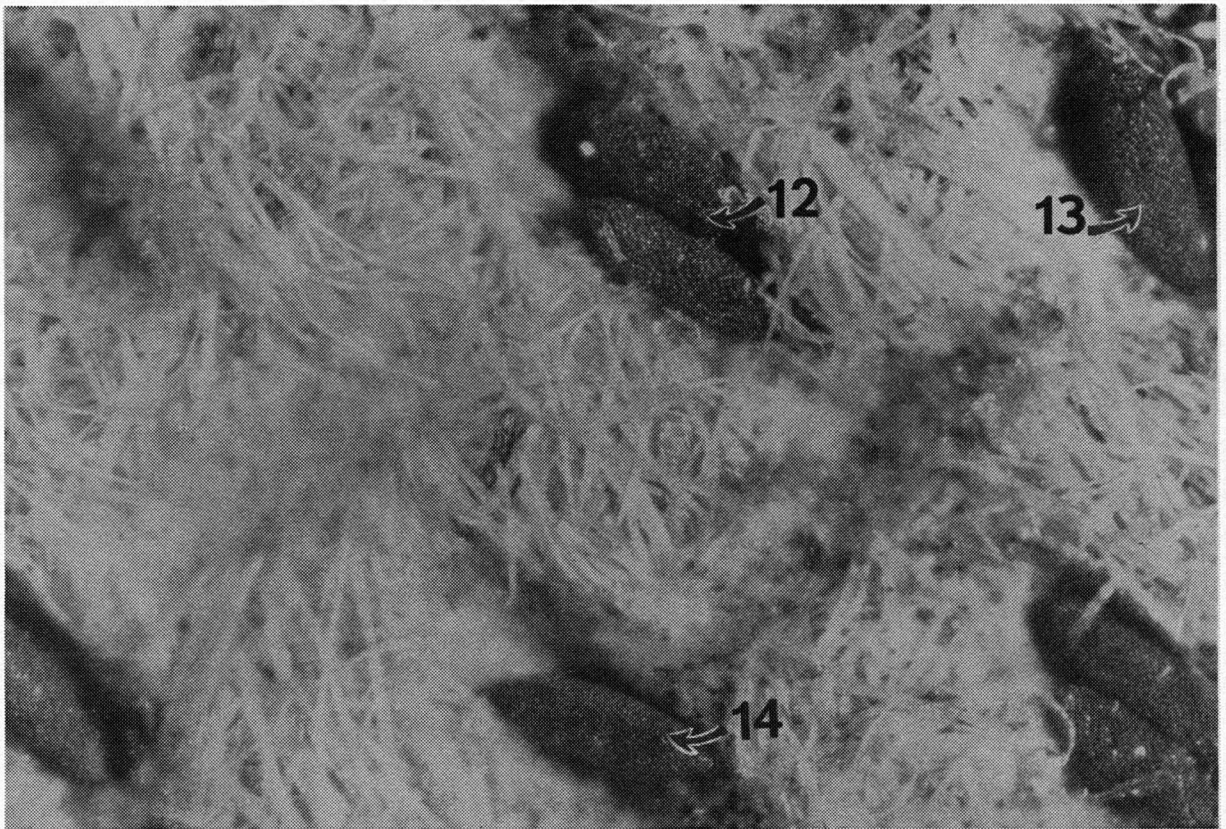
#### APPENDIX A

After studying the photographs on page 13, try your skill at differentiating between the eggs of Aedes aegypti and those of Aedes triseriatus. In the series of photographs given here (pages 23, 24, and 25), eggs have been labeled with the numbers 1 to 14 and spaces provided (page 25) for writing in aegypti or triseriatus, as applicable. After you have written in your answers, check them with those listed on page 26.









Write aegypti or triseriatus on each of these lines.

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

5. \_\_\_\_\_

6. \_\_\_\_\_

7. \_\_\_\_\_

8. \_\_\_\_\_

9. \_\_\_\_\_

10. \_\_\_\_\_

11. \_\_\_\_\_

12. \_\_\_\_\_

13. \_\_\_\_\_

14. \_\_\_\_\_

Now turn the page and check your answers.

ANSWERS:

1. aegypti

2. triseriatus

3. triseriatus

4. aegypti

5. aegypti

6. triseriatus

7. aegypti

8. triseriatus

9. triseriatus

10. aegypti

11. triseriatus

12. triseriatus

13. triseriatus

14. triseriatus



## APPENDIX B

### Identification of First Stage Larvae

In some cases, particularly in areas where Aedes atropalpus occurs, it is not possible, at this time, to reliably identify the eggs of Aedes on the ovitrap paddles. After the eggs have "cured" on damp paddles in plastic bags for 3 to 5 days, they should be allowed to air dry one day more and should then be placed in pans of water with a small amount of powdered dog food or a guinea-pig food pellet. When the eggs have hatched, the first stage larvae can be identified with the aid of the key, the chart of species characteristics, and the illustrations that follow.

#### PROVISIONAL KEY TO SOME FIRST STAGE LARVAE OF CONTAINER-BREEDING AEDES

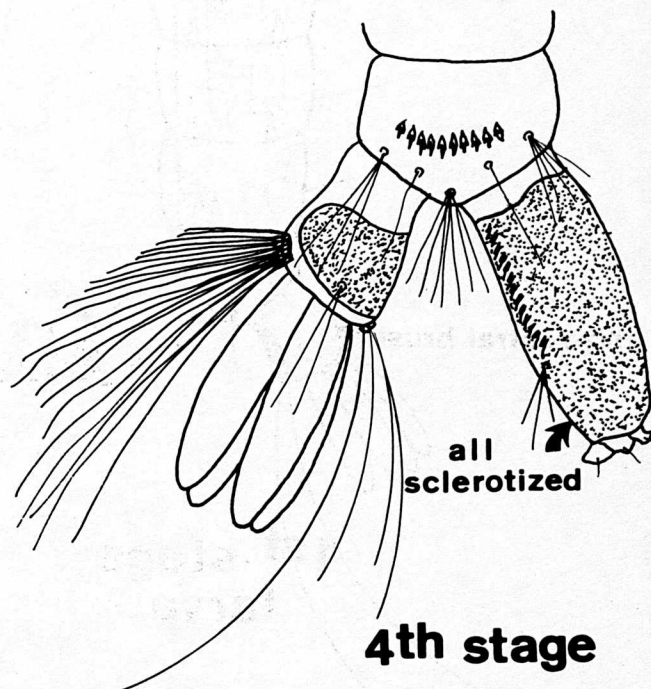
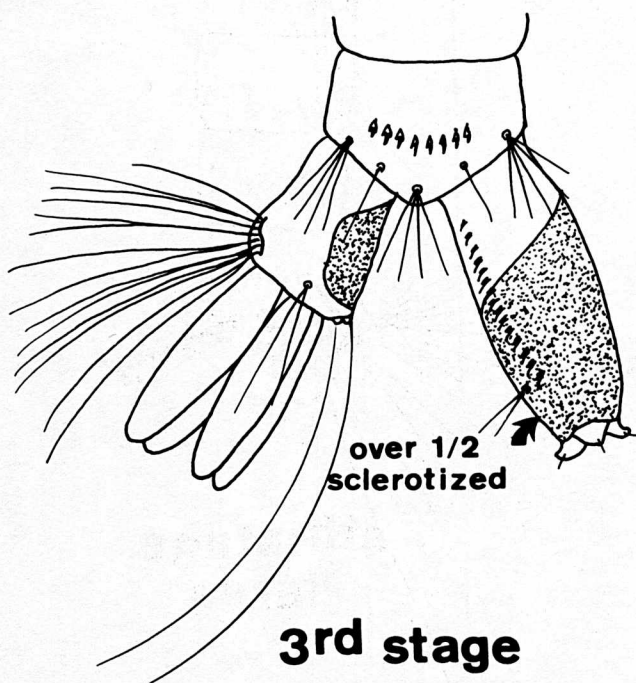
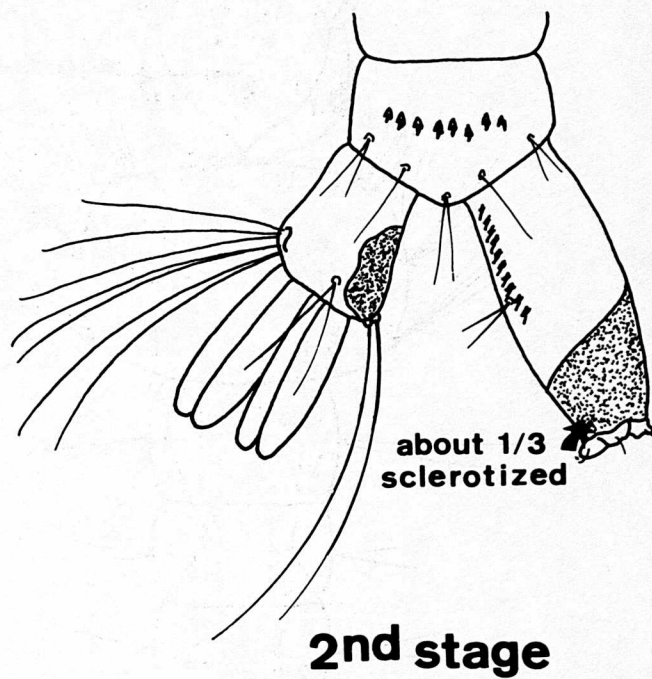
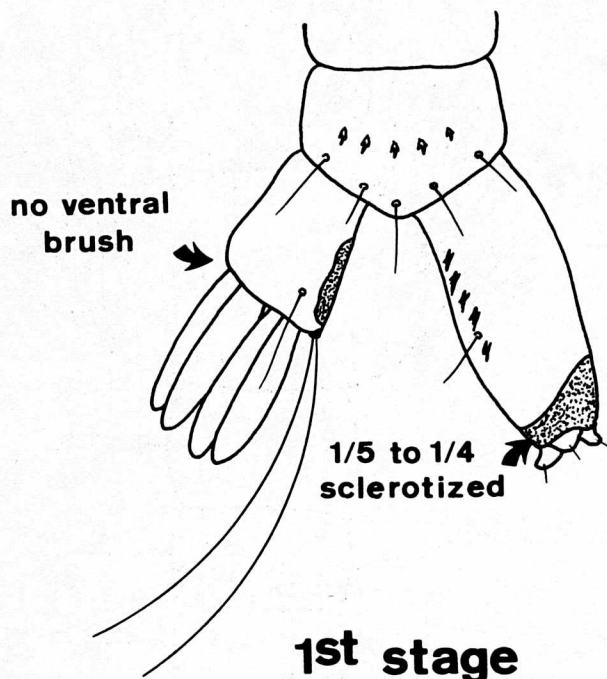
1. Antennal hair double . . . . . 2  
Antennal hair single . . . . . 4
2. Antennal shaft rough; pecten unevenly spaced, air tube hair inserted before last pecten tooth . . . . . Ae. aegypti  
Antennal shaft smooth; pecten evenly spaced, air tube hair inserted beyond last pecten tooth . . . . . 3
3. Hawaiian species; pecten straight, air tube hair branched . . . . . A. albopictus  
West Indian species; pecten spiral, air tube hair single . . . . . A. mediovittatus
4. Antennal shaft roughened; air tube hair inserted before last pecten tooth; lateral hair of anal segment single . . . . . A. atropalpus  
Antennal shaft smooth; air tube hair inserted beyond last pecten tooth; lateral hair of anal segment 2- to 3-branched . . . . . 5
5. Air tube hair 2- or 3-branched . . . . . A. triseriatus  
Air tube hair single . . . . . A. zoosophus

Key Characteristics of First Stage Larvae of Container-Inhabiting Aedes

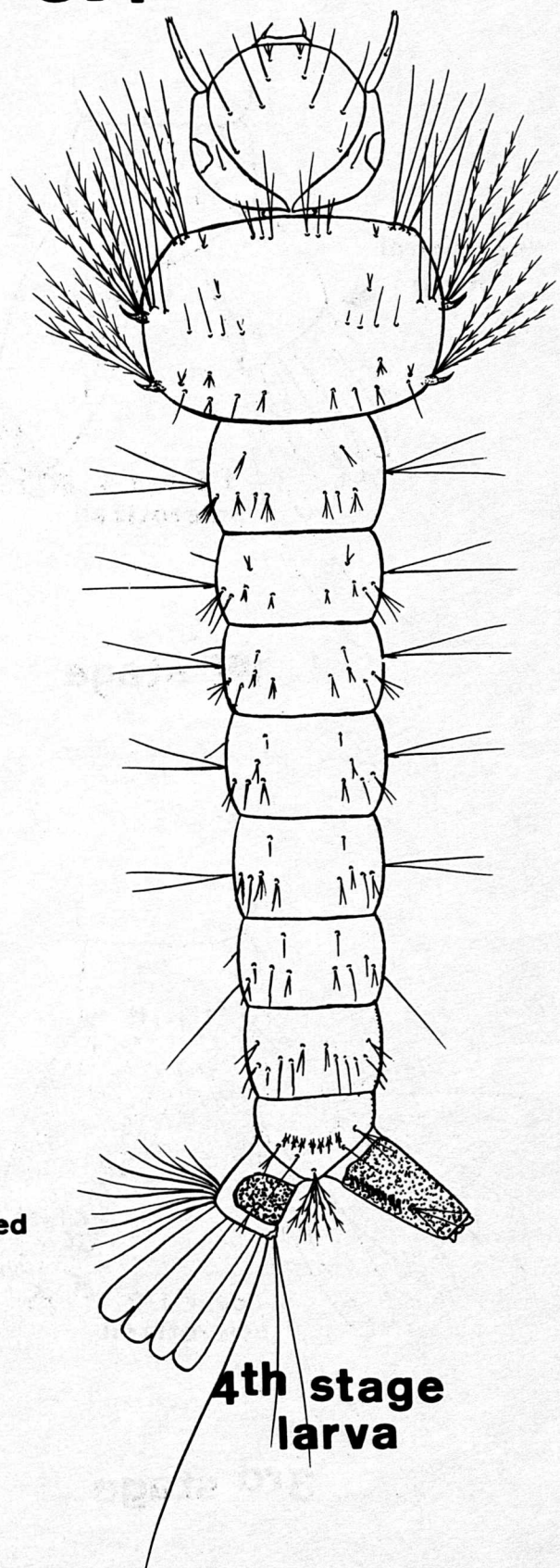
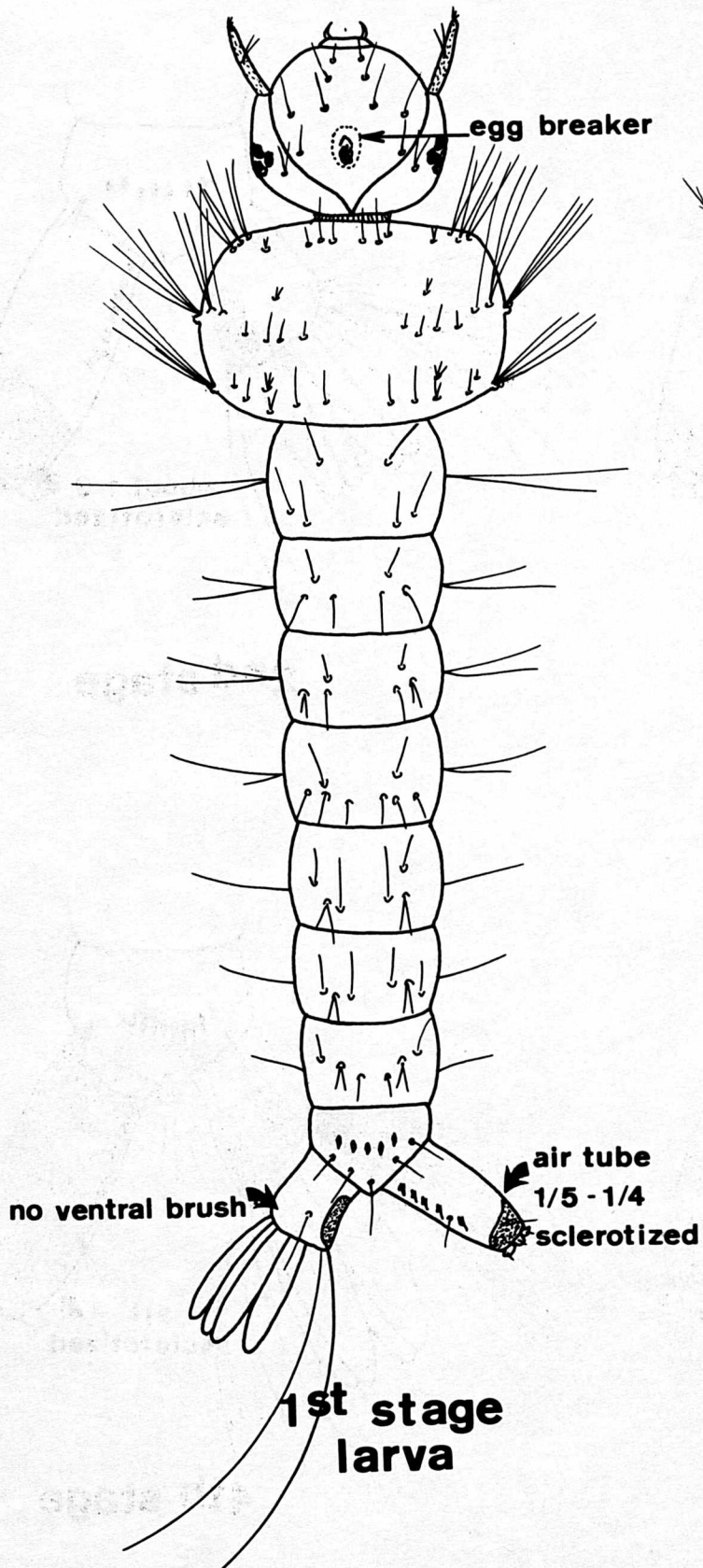
Species	<u>aegypti</u>	<u>triseriatus</u>	<u>atropalpus</u>	<u>zoosophus</u>	<u>mediovittatus</u>	<u>albopictus</u>
Antennal Hair	Double	Single	Single	Single	Double	Double
Antennal Shaft	Rough	Smooth	Rough	Smooth	Smooth	Smooth
Air Tube Hair	Single Before last pecten tooth	2-3 branched Beyond last pecten tooth	Single Before last pecten tooth	Single Beyond last pecten tooth	Single Beyond last pecten tooth	2-3 branched Beyond last pecten tooth
Anal gills	Equal	Unequal	Equal	Unequal	Unequal	Equal
Laternal Hair of Anal Segment	Single	2-3 branched	Single	2-3 branched	Single	Single



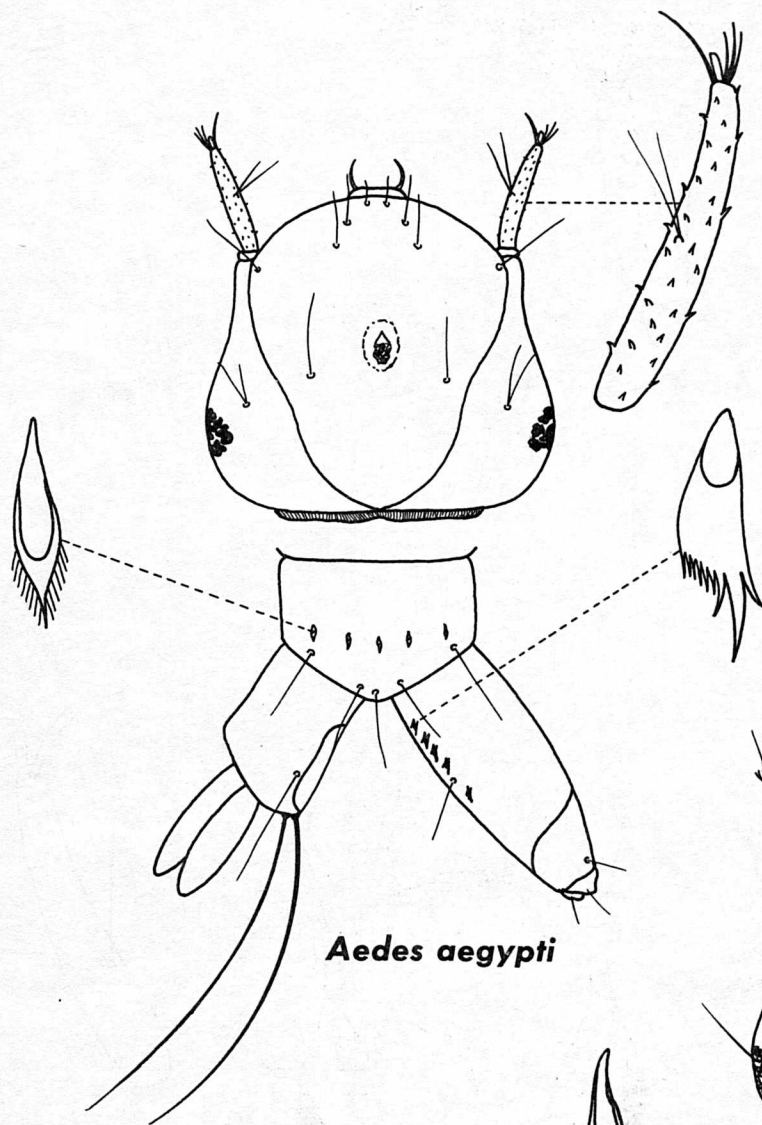
# Aedes aegypti



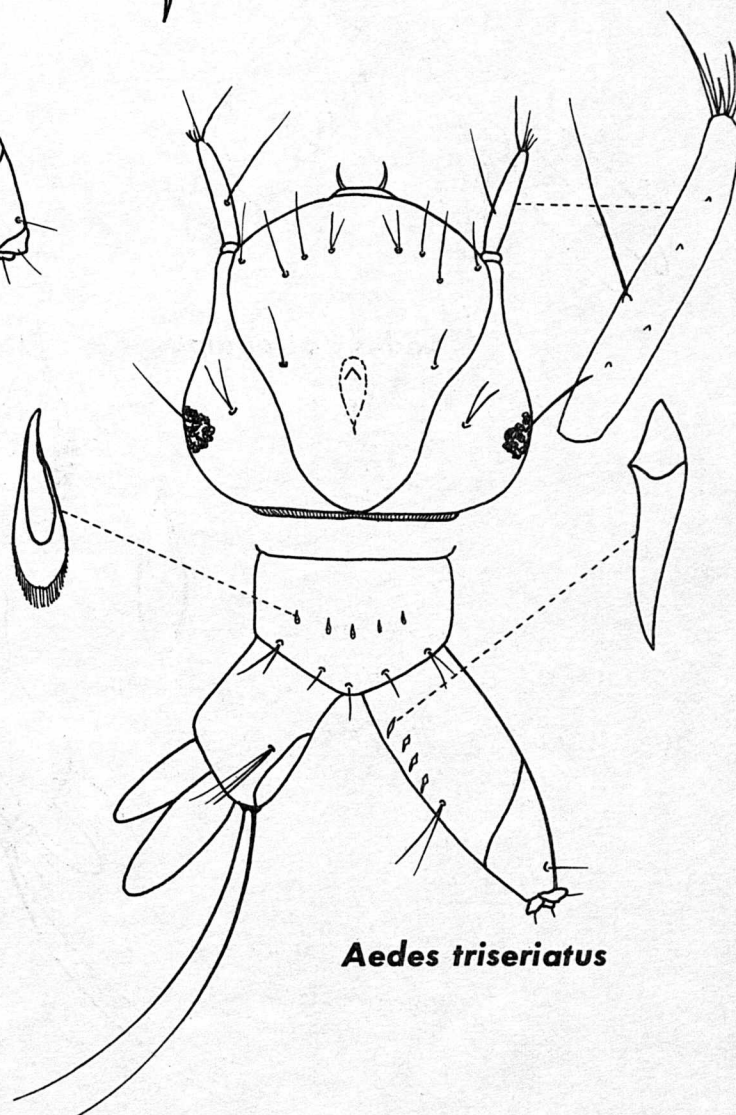
# Aedes aegypti



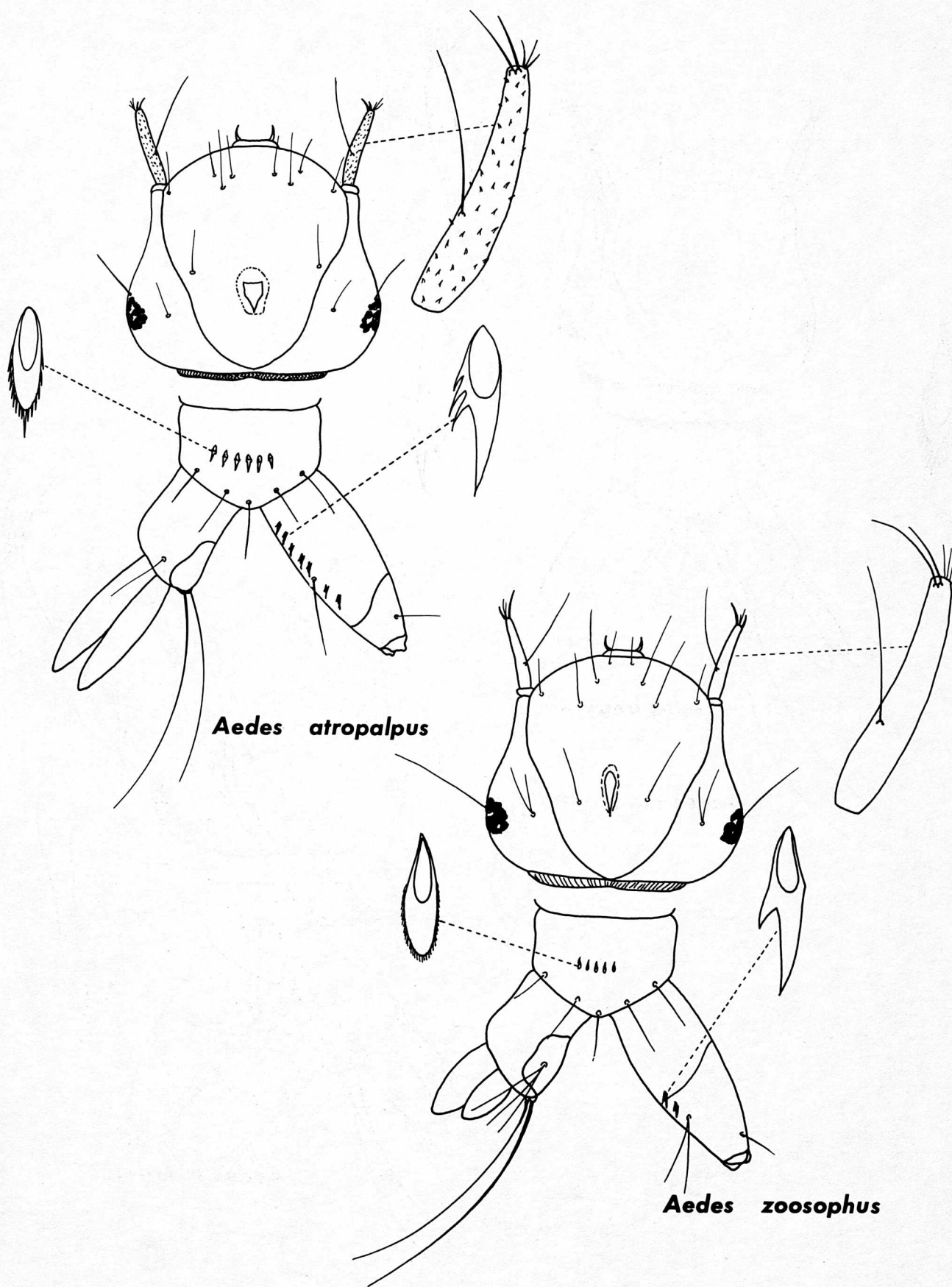




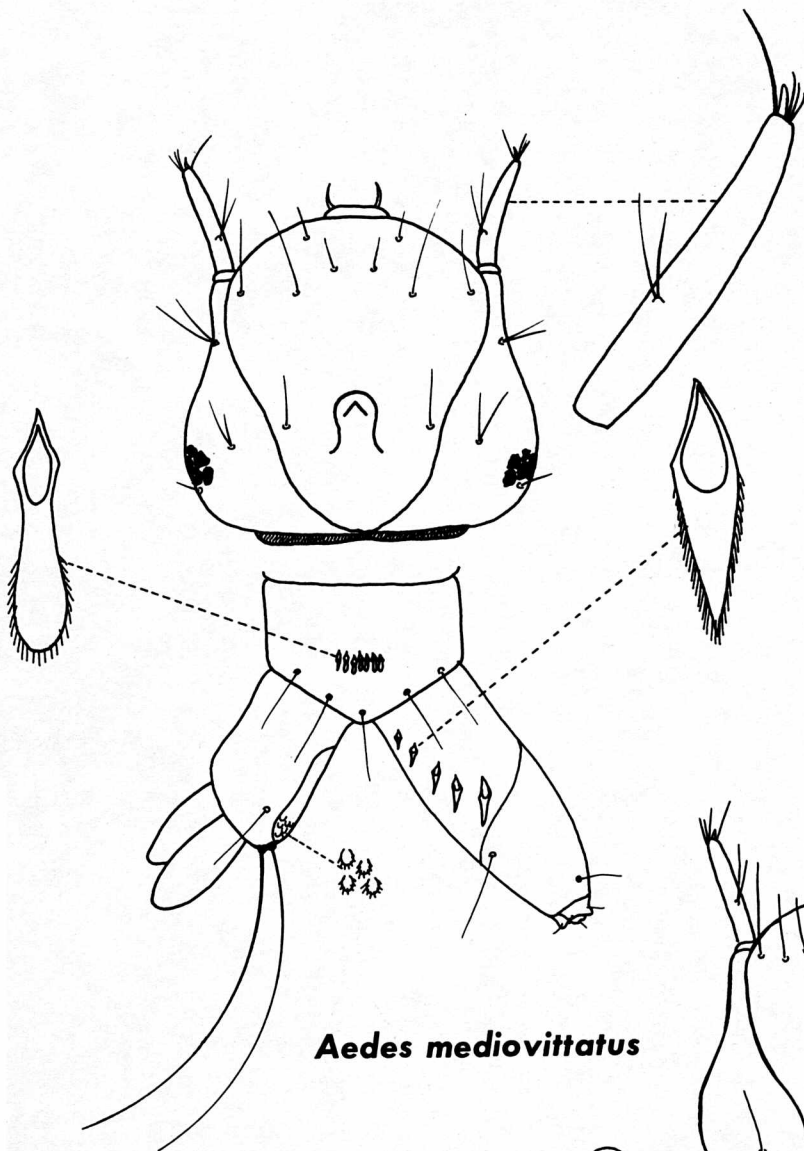
***Aedes aegypti***



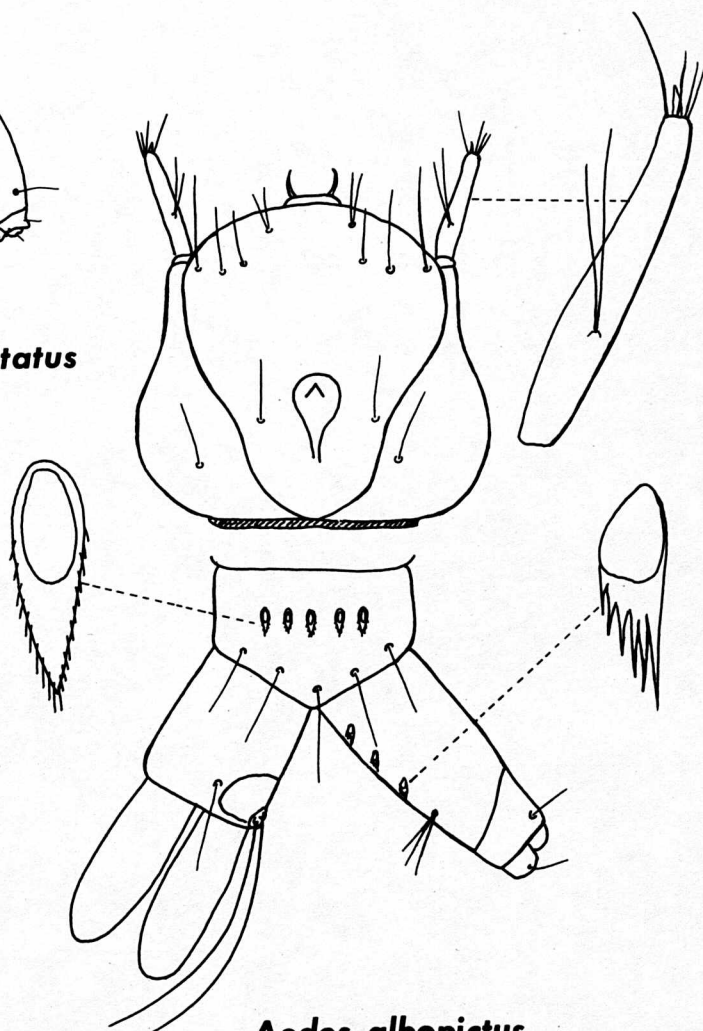
***Aedes triseriatus***







***Aedes mediovittatus***



***Aedes albopictus***

