

## **Historic, archived document**

Do not assume content reflects current scientific knowledge, policies, or practices.



erve  
1831B  
UNITED STATES DEPARTMENT OF AGRICULTURE  
AGRICULTURAL RESEARCH ADMINISTRATION  
BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE

I N S E C T P E S T S U R V E Y

Special Supplement (1948, No. 5)

Issued May 20, 1948

× THE FIELD STATUS OF PARASITES OF THE EUROPEAN  
CORN BORER AT THE CLOSE OF 1947

By K. D. Arbuthnot, D. W. Jones, S. W. Carter, and R. W. Evans  
Division of Cereal and Forage Insect Investigations

Overwintering larvae of the European corn borer (*Pyrausta nubilalis* (Hbn.)) were collected<sup>1/</sup> in 19 States in the fall of 1947 to determine the establishment, maintenance, and dispersion of parasites introduced to aid in control of this pest. Data were obtained on 32,155 borers by the individual isolation method.

Two methods were used to delimit the localities from which borers were collected. The first method was to collect borers close to parasite-colonization sites, and here from 1 to 25 collections were made. Borers were obtained by this method from 13 States at 92 localities, and they comprised 422 collections containing 16,301 specimens. The second method was to collect borers from extensive areas without regard to parasite-colonization sites. State maps were used, on which numbered sections were drawn, each 10 miles square. A sample of 50 borers was to be collected from the approximate center or, if not obtainable there, any place within the section. Borers were obtained by this method from 10 States and comprised 346 collections including 15,854 specimens.

Collections Made at Colonization Points

The collections made at parasite-colonization points are summarized in table 1.

Delaware

New Castle County, Kirkwood. Three species of parasites were recovered from this locality. *Chelonus annulipes* Wesm., released here in 1945, was recovered for the first time in 1947. *Lydella grisescens* R. and D., accounted for 18 percent of the borers observed in this year.

---

<sup>1/</sup> All the collections from Delaware, Maryland, Kentucky, Minnesota, Missouri, Pennsylvania, and Wisconsin, and many of those from Illinois, Indiana, Iowa, New Jersey, New York, and Virginia were obtained through the cooperation of agricultural experiment station or department of agriculture entomologists in the respective States.

The previous records for this species were 20 percent in 1946, 4 percent in 1945, and 3 percent in 1943, the year in which it was released. Macrocentrus gifuensis Ashm. was reared from 0.4 percent of the borers in 1947. It was first recovered here in 1946, the last of 4 years in which releases were made.

Sussex County, Stockley. Lydella grisescens was the only parasite recovered from this locality, where it was reared from 16 percent of the borers. The percentage parasitized was 15, 12, 12, and 28 in successive years from 1943 through 1946. L. grisescens was released here in 1941.

### Illinois

There were 67 collections from 21 localities in Illinois. Eulophus viridulus Thoms. was recovered from 4 localities in the following counties: Kankakee, La Salle, Ogle, and Warren. Horogenes punctorius (Roman) was recovered from La Salle County where it was released this year. Lydella grisescens was recovered from 12 localities, where it was reared from 53 of the 58 collections obtained. The last releases of L. grisescens were made in these counties as follows: 1947 in Warren; 1946 in Kankakee, La Salle, Ogle, Pecunia, and Whiteside; 1945 in Rock Island and Vermilion; 1944 in Champaign, Logan, Stephenson, and Woodford. Two native parasites were reared from the corn borer -- Bassus agilis Cress. from Ogle County, and Pyraustomyia penitalis Coq. from Rock Island County.

### Indiana

The 86 collections from Indiana were made in 15 localities. Lydella grisescens, the only species recovered, was found in 8 localities. It was released in 1947 in three of the counties, Clay, Hamilton, and Henry; in 1946 in Benton, Blackford, and St. Joseph Counties while in Jasper and Tipton Counties it had not been released since 1945. Extensive collections showed this species was widely distributed at the Jasper locality where it was recovered from 15 of the 18 collections, and at Tipton where it was recovered from 24 of 25 collections. The percentage of borers parasitized by it at Tipton in 1945, 1946, and 1947 was 31, 36, and 30, respectively.

### Iowa

The 27 localities from which collections were made in Iowa was the greatest number in any State. There were 76 collections taken in these localities: Horogenes punctorius was recovered from Clinton County, where it was released and recovered in 1944 but was not recovered in 1945 and 1946. It was also recovered at one locality in Dubuque County, where it was released in 1944 and 1946 but not recovered in 1946, the only other year when a collection was made there. Lydella grisescens was recovered from 11 localities. It was released in 1947 in Clayton and Guthrie Counties and at Prairie Creek in Dubuque County. The last release was made in 1946 in Black Hawk, Marshall, and Poweshiek Counties, and at White Water in Dubuque County. The only releases made in Clinton County, Comanche township, and Muscatine County, Sweetland township,

were in 1944. The percentages of borers parasitized by this species were, in Comanche, 1, 11, 30, and 41 and, in Sweetland, 1, 10, 30, and 32, respectively, in 1944, 1945, 1946, and 1947. L. grisescens was not released in Monmouth, Jackson County, or in Lake, Muscatine County, but apparently has spread into these townships from other localities.

Macrocentrus gifuensis was recovered from Clayton, Jackson, and Mitchell Counties, where it was released in 1947. Two native parasites were reared from corn borers in Iowa, Meteorus sp. from Marshall County and Pyraustomyia penitalis from Audubon, Bremer, Clinton, Dubuque, and Muscatine Counties.

#### Kentucky

Seventeen collections were obtained from one locality in Lexington township, Fayette County, Kentucky - 1 from the release site, and 16 in a circle extending from 5 to 7 miles from the site. Lydella grisescens was the only parasite recovered, but it was reared from every one of the collections, the percentage parasitized ranging from 20 to 68 percent among the collections. The last release of this species in this locality was in 1944.

#### Michigan

The 7 collections at one locality in Michigan produced only Lydella grisescens. In that locality it has parasitized 23, 17, 19, 21, and 26 percent of the borers in successive years from 1943 through 1947.

#### Minnesota

Collections from six counties in Minnesota showed recoveries of exotic species of parasites from five counties, but no parasite was recovered from Watonwan County. Horogenes punctorius was recovered in Le Sueur County, where it was released in 1946 and 1947. Lydella grisescens was recovered from Fillmore and Le Sueur Counties, where it was released in 1946 and 1947, and from Goodhue and Houston Counties, where it was last released and recovered in 1946. Macrocentrus gifuensis was released and recovered in Le Sueur County in 1947. This is the first recovery of this species in the State. The native Aplomya caesar Ald. was reared from the collection in Houston County.

#### Missouri

Collections were obtained from two counties in Missouri where the first releases of corn borer parasites in the State were made in 1947. Lydella grisescens was recovered from St. Louis County, and the native Pyraustomyia penitalis was reared from the Marion County collection.

#### New Jersey

There were two release localities in New Jersey from which collections were obtained in 1947. Horogenes punctorius continued to spread and increase in abundance at the Burlington County locality. Lydella grisescens had parasitized a smaller percentage of borers in 1947 than

in 1945 and 1946, although it was recovered from 24 of the 25 collections. Macrocentrus gifuensis showed considerable spread, and the percentage of borers parasitized by it was the highest that has been recorded at this locality. Parasitization decreased from 1946 to 1947 in the Monmouth County locality where Horogenes punctorius showed a slight decline, Lydella grisescens accounted for only about one-half as many borers, and Macrocentrus gifuensis declined a little from the rate of occurrence in the previous year.

New York

Ten collections were made at the Cattaraugus Indian Reservation. Eulophus viridulus was recovered in 5 of the collections. Horogenes punctorius was recovered from 9 of the collections and accounted for 14 percent of all borers observed. Lydella grisescens occurred in 5 collections, but parasitized only 1 percent of the borers observed.

North Carolina

Collections at the Camden County locality showed a parasitization of 11 percent of the borers by Lydella grisescens, the only parasite recovered there. In 1946, 71 percent of the borers were parasitized by this species.

Ohio

Collections were obtained from 6 localities in Ohio. No parasites were recovered from the Clark and Franklin County localities where they were first released in 1947. Eulophus viridulus was recovered only from Erie County in 1947. Horogenes punctorius was recovered from Van Wert County, where it was released but not recovered in 1946. Lydella grisescens was recovered from 4 localities. In Erie County parasitization was 21 percent, highest since 1942. In Hamilton County 30 percent of the borers were parasitized by L. grisescens. These were found among 9 collections, 3 of which were more than 5 miles north and west of the release point, and parasitization was as high there as at the release site. The 34 percent parasitization in Lucas County was the highest recorded in this locality in 8 years. L. grisescens has accounted for 0.5, 3, and 10 percent of the borers observed in Van Wert County in 1945, 1946, and 1947, respectively. Macrocentrus gifuensis was recovered from Van Wert County where it was released in 1947.

Wisconsin

Exotic species were found in collections from 6 counties in Wisconsin but none were recovered from Calumet or Winnebago Counties. Eulophus viridulus was recovered from Rock County, where it was not released. Horogenes punctorius was recovered from LaCrosse and Rock Counties, where it was released in 1947. No collections were obtained from the localities where it was recovered in 1946. Lydella grisescens was recovered from Fond du Lac, La Crosse, and Sauk Counties, where it was released in 1947, and from Green and Rock Counties, in localities where it was never released. However, the last two localities are not a great distance from sites where it was released and recovered in 1944 and 1945.

Results of an Extensive Survey in the Eastern States

A survey was conducted in the fall of 1947 in 10 Eastern States, in cooperation with State entomologists, to determine the dispersion and abundance of European corn borer parasites. The rectangular coordinate design, used in 1945 and 1946 in southern New England, was used there this year and also in the entire States of Delaware and New Jersey, a large area in the Hudson River Valley in New York, southeastern Pennsylvania, most of Maryland, southeastern Virginia, and northeastern North Carolina. The areas to be surveyed were divided into sections 10 miles square, and numbered consecutively. A collection of about 50 borers was proposed from each section, and was obtained from every one of the sections in Delaware, from nearly all of the sections in New England and New Jersey, in blocks of adjoining sections in Pennsylvania, Virginia, and North Carolina, throughout most of the New York area, and in Maryland, from every other one of the sections in extensive areas of the State.

The data are grouped by numbered areas in table 2, where the approximate size of each area is shown. The estimated total area surveyed (36,700 square miles) is about the size of the State of Indiana. There were 346 collections, and data were obtained from 15,854 borers by the individual-isolation method. The areas where collections were made are shown in figure 1.

New England

Comparable data are available for the four areas in New England for 1945, 1946, and 1947. These data are presented in table 3. Macrocentrus gifuensis was the most abundant species in all four areas in 1947.

Area 1. Horogenes punctorius, Lydella grisescens, and Macrocentrus gifuensis, the exotic species recovered in this area, declined in abundance from 1945 through the following 2 years. M. gifuensis accounted for the greatest percentage of borers in each year.

Area 2. Horogenes punctorius parasitized the highest percentage of borers in this area in 1945 and 1946, but in 1947 it was exceeded by Macrocentrus gifuensis. Lydella grisescens declined here, as it did in area 1.

Area 3. Chelonus annulipes was more abundant in this area than in any other, but it did not account for 1 percent of the borers in any year. Of the four New England areas, Horogenes punctorius was lowest in area 3 and showed an annual decline. Lydella grisescens was more abundant here in 1946 than in any other year or area in New England, but it then accounted for only 1.4 percent of the borers. Macrocentrus gifuensis was the most effective parasite in 1945 and 1946, but in 1947 it was much less effective here and was more abundant in areas 1 and 4.

Area 4. Chelonus annulipes was recovered here in each of the 4 years. Horogenes punctorius parasitized nearly 5 percent of the borers in this area in the first 2 years, but in 1947 it accounted for only 0.7 percent. Lydella grisescens was present but not abundant. Macrocentrus gifuensis increased in 1946 and 1947, and in the last year was more abundant than in any other New England area.

No surveys have been made in the remaining areas to provide comparable data in previous years. The 1947 data are summarized in the following discussion.

#### New York

Area 5. Chelonus annulipes was recovered from 1 of the 14 collections in this area. Lydella grisescens appeared in 5 collections, 4 of which were in the southern part of the area, but it accounted for only 2 percent of the total number of borers. Macrocentrus gifuensis parasitized 16 percent of the borers, was reared from 11 of the 14 collections, and was found throughout the area.

#### New Jersey

Area 6. Horogenes punctorius was recovered from 2 of the 31 collections in this area. Lydella grisescens, the most abundant parasite here, was recovered from 30 of the 31 collections, while Macrocentrus gifuensis appeared in 14 collections.

Area 7. Horogenes punctorius was recovered from 6 of the 16 collections in this area, where it was more abundant than in any other area, except 1 and 2 in Massachusetts. Lydella grisescens was recovered from every one of the collections in this area, and parasitized a greater percentage of the borers than in any other area in New Jersey. Macrocentrus gifuensis appeared in 6 of these 16 collections.

Area 8. Horogenes punctorius was recovered from 4, Lydella grisescens from 16, and Macrocentrus gifuensis from 3 of the 17 collections in the area. They occurred less frequently here than in area 7, and the percentage of borers parasitized by each species was lower than in area 7.

Area 9. Lydella grisescens was the only species recovered in this area, where it occurred in 20 of the 22 collections, and accounted for 15 percent of the borers.

#### Pennsylvania

Area 10. There were only 4 collections from this area, and Lydella grisescens was recovered from every one of them, while Macrocentrus gifuensis was recovered from 1.

Area 11. Each of the 6 collections from this area produced Lydella grisescens. Macrocentrus gifuensis was recovered from 4 of them.

Area 12. Lydella grisescens was the only species recovered from this area, but it was found in 11 of the 12 collections.

Area 13. All 10 easternmost collections in this area produced Lydella grisescens. None were found in the 8 western collections. Macrocentrus gifuensis was recovered from 1 collection along the eastern border of the area.



Delaware

Area 14. Lydella grisescens was recovered from all but one of the 30 collections, and that was from the center of the State. Macrocentrus gifuensis was recovered from one of the northernmost collections.

Maryland

Area 15. Lydella grisescens was recovered from 12 of the 18 collections, and it was generally present in all but the extreme western part of the area. Macrocentrus gifuensis was found in 2, the most western and the most northeastern collections.

Area 16. The 2 collections in this area produced Lydella grisescens.

Area 17. Horogenes punctorius was recovered from the most southern collection in this area, and Lydella grisescens was reared from 6 of the 7 collections.

Area 18. Lydella grisescens parasitized only 7 percent of the borers from this area, where it appeared in 4 of the 6 collections.

Virginia

Area 19. Lydella grisescens was the only parasite recovered from this area, where it was found in 10 of the 11 collections.

Area 20. The percentage of borers parasitized by Lydella grisescens was lower in this area than in area 19, but here it was recovered from every one of the 9 collections.

North Carolina

Area 21. Of the 6 collections in this area, 4 produced Lydella grisescens, the only species recovered.

Table 1.--Numbers of European corn borer larvae observed, and parasitization in the fall of 1947 from localities where exotic species of parasites have been colonized<sup>1/</sup>

Locality (State-County-Township)	Number of borers observed	Percentage of borers parasitized by-						Total parasitization (Percent)
		<u>Chelonus</u> <u>annulipes</u>	<u>Eulophus</u> <u>viridulus</u>	<u>Horogenes</u> <u>punctatorius</u>	<u>Lydella</u> <u>griseicens</u>	<u>Macrocentrus</u> <u>gifuensis</u>	Native parasites	
Delaware:								
New Castle, Kirkwood	1,006	.1	0	0	18	0.4		19
Sussex, Stockley	1,003	0	0	0	16	0		16
Illinois:								
Champaign, Champaign	51	-	-	-	22	0		22
Hancock, Prairie	47	-	-	-	0	0		0
Henderson, Media	46	-	-	-	0	-		0
Kankakee, St. Anne	199	0	.5	0	28	0		28
La Salle, Bruce	538	-	1	1	18	0		20
Livingston, Dwight	58	-	-	-	0	0		0
Logan, West Lincoln	182	-	-	0	19	0		19
Madison, Edwardville	19	-	-	-	-	0		0
Fort Russell	23	-	-	-	-	0		0
Moro	23	-	-	-	-	0		0
McDonough, Tennessee	40	-	-	-	0	-		0
Ogle, Oregon	333	-	1	-	20	0	.6 <sup>2/</sup>	21
Peoria, Timber	104	-	-	-	2	0		2
Rock Island, Black Hawk	408	0	0	0	1	0	3 <sup>3/</sup>	4
St. Clair, Engelmann	10	-	-	-	-	0		0
Smithton	99	-	-	-	-	0		0
Stephenson, Silver Creek	46	-	-	-	57	0		57
Vermilion, Grant	129	-	-	0	32	0		32
Warren, Tompkins	44	-	2	-	5	0		7
Whiteside, Lyndon	108	-	-	0	25	0		25
Woodford, Roanoke	98	-	-	-	24	0		24
Indiana:								
Benton, Pine	57	-	-	-	7	0		7
Blackford, Washington	30	-	-	-	10	0		10
Clay, Harrison	3	-	-	0	67	0		67
Fountain, Mellott	8	-	-	-	0	0		0
Hamilton, Noblesville	38	-	-	-	29	0		29
Hendricks, Union	90	-	-	-	-	0		0
Henry, Franklin	73	-	-	-	4	0		4
Jasper, Union	377	-	-	0	13	0		13
Kosciusko, Clay	46	-	-	-	0	0		0
Marshall, Center	90	-	-	0	0	0		0
Putnam, Russell	55	-	-	-	0	0		0
St. Joseph, Warren	59	-	-	-	7	0		7
Switzerland, Jefferson	21	-	0	-	0	0		0
Tipton, Wildcat	560	0	-	0	30	0		30
Vermillion, Newport	57	-	-	-	16	0		16

Table 1.--Continued

Locality (State-County-Township)	Number of borers observed	Percentage of borers parasitized by-							Native parasites	Total parasitization (Percent)
		Chelonus annulipes	Eulophus viridulus	Horogenes punctatorius	Lydella grisescens	Macrocentrus gifuensis				
Iowa:										
Allamakee, Franklin	33	-	0	0	0	0			0	
Audubon, Hamlin	48	-	-	-	0	0		2 3/4	2	
Black Hawk, Big Creek	53	-	-	-	2	0			2	
Bremer, Jackson	48	-	-	-	0	0		2 3/4	2	
Chickasaw, Jacksonville	56	-	-	-	0	1			0	
Clayton, Cox	48	-	-	-	10	4			14	
Clinton, Comanche	87	0	0	1	41	0		1 3/4	43	
Crawford, Denison	41	-	-	-	-	0			0	
Dubuque, Prairie Creek	92	0	-	-	3	0		2 3/4	5	
Table Mound	58	-	-	-	0	0		3 3/4	3	
White Water	110	0	-	1	25	0			26	
Floyd, Floyd	68	-	-	-	-	0			0	
Greene, Jackson	54	-	-	-	-	0			0	
Guthrie, Valley	41	-	-	-	2	0			2	
Harrison, Harrison	46	0	-	0	0	0			0	
Jackson, Monmouth	42	-	-	0	3	2			5	
Mahaska, Lincoln	40	-	-	0	-	0			0	
Marshall, Eden	37	-	-	-	-	0			0	
Liscomb	197	-	-	-	17	0		1 4/4	18	
Mitchell, Burr Oak	35	-	-	-	-	3			3	
Muscatine, Lake	563	-	-	0	16	0		.23/	16	
Sweetland	523	0	0	0	32	0			32	
Palo Alto, Emmetsburg	43	-	-	-	0	0			0	
Poweshiek, Warren	43	-	-	-	5	0			5	
Sac, Clinton	45	-	-	-	-	0			0	
Warren, Lincoln	42	-	-	-	-	0			0	
Wright, Lincoln	42	-	-	-	-	0			0	
Kentucky:										
Fayette, Lexington	803	-	0	0	42	0		.43/	42	
Michigan:										
Monroe, Erie	366	0	0	0	26	0			26	
Minnesota:										
Fillmore, Newborg	119	-	0	0	6	0			6	
Goodhue, Pine Island	82	-	-	0	1	0			1	
Houston, Wilmington	113	-	0	0	5	0		1 5/4	6	
Le Sueur, Tyrone	33	-	0	3	3	3			9	
Watonwan, St. James	34	-	-	0	0	0			0	
Missouri:										
Marion, Liberty	45	-	-	-	0	0		2 3/4	2	
St. Louis, Maramac	81	-	-	0	1	0			1	

Table 1.--Continued

Locality (State-County-Township)	Number of borers observed	Percentage of borers parasitized by						Native parasites	Total parasitization (Percent)
		<u>Chelonus</u> <u>annulipes</u>	<u>Eulophus</u> <u>viridulus</u>	<u>Horogenes</u> <u>punctorius</u>	<u>Lydella</u> <u>griseus</u>	<u>Macrocentrus</u> <u>gifuensis</u>			
New Jersey:									
Burlington, Burlington	1,153	0	0	5	15	2		6/	22
Monmouth, Atlantic	1,022	0	0	4	13	10		.1	27
New York:									
Cattaraugus Indian Reservation	386	-	2	14	1	0			17
North Carolina:									
Camden, Camden	101	-	0	0	11	0			11
Ohio:									
Clark, Bethel	94	-	-	-	0	0			0
Erie, Perkins	491	0	.4	0	20	0			21
Franklin, Clinton	92	-	-	-	0	0			0
Hamilton, Colrain	414	-	0	0	30	0		.5	31
Lucas, Jerusalem	669	0	0	0	34	0			34
Van Wert, Ridge	544	-	-	5	10		.6		15
Wisconsin:									
Buffalo, Alma	92	-	-	-	-	5			5
Calumet, Charlestown	22	-	-	-	0	0			0
Fond du Lac, Springvale	277	-	-	-	2	0			2
Green, Cadiz	123	-	-	-	2	1			3
La Crosse, Hamilton	145	-	0	2	15	3			20
Rock, Beloit	230	-	1	4	9	0			14
Sauk, Excelsior	95	-	-	-	4	0			4
Winnebago, Omro	55	-	-	-	-	0			0

1/ 0 indicates that the species was released, but it was not recovered in 1947. A dash (-) indicates no release or recovery.

2/ Bassus agilis Cress.

3/ Pyraustomyia penitalis Coq.

4/ Meteorus sp.

5/ Aplomya caesar Ald.

6/ Species not determined.

Table 2.--European corn borer larvae observed, and parasitization in collections made in the fall of 1947 in the Eastern United States to determine the distribution and abundance of parasites

Area located in	Area number	Approximate size Sq. mi.	Number of collections	Number of borers observed	Percentage of borers parasitized by							
					Chelonus annulipes	Horoglyphus punctatorius	Lydella grisescens	Macrocentrus gifuensis	Native parasitic sites	All species		
New England:												
Massachusetts,												
Eastern	1	2,400	23	1,176	-	3.0	0.3	22	-	25		
Central	2	3,000	29	1,431	-	6	.2	6	-	12		
Rhode Island and Southern Massachusetts												
	3	3,000	30	1,349	0.3	.1	.7	20	0.1 <sup>1/2</sup>	21		
Connecticut	4	3,500	35	1,790	.1	.7	.2	24	.1 <sup>1/2</sup>	25		
New York:												
Hudson River Valley												
	5	2,800	14	640	.2	-	2	16	-	18		
New Jersey:												
Northern												
	6	2,700	31	1,402	-	.1	12	4	.3 <sup>2/3</sup>	16		
North Central												
	7	1,400	16	729	-	2	20	3	-	25		
South Central												
	8	1,500	17	733	-	.7	16	2	.1 <sup>2/3</sup>	18		
Southern												
	9	1,900	22	886	-	-	15	-	-	15		
Pennsylvania:												
East Central												
	10	400	4	128	-	-	19	2	-	21		
Near Philadelphia Southeastern,												
	11	600	6	320	-	-	13	4	.3 <sup>3/4</sup>	17		
East of Susquehanna River												
	12	1,200	12	537	-	-	20	-	-	20		
West of Susquehanna River												
	13	1,800	18	862	-	-	9	.1	-	9		

Table 2.--Continued

Area located in	Area number	Approximate size sq. mi.	Number of collections	Number of borers observed	Percentage of borers parasitized by					
					<u>Chelonus annulipes</u>	<u>Horogenes punctorius</u>	<u>Lydella grisescens</u>	<u>Macrocentrus gifuensis</u>	<u>Native parasites</u>	All species
Delaware:	14	2,400	30	1,381	-	-	12	.1	-	12
Maryland:										
Northern	15	3,300	18	714	-	-	13	1	-	14
Southern	16	400	2	88	-	-	27	-	-	27
Eastern Shore:										
Northern	17	1,100	7	247	-	0.4	22	-	-	23
Southern	18	900	6	230	-	-	7	-	0.43/	7
Virginia:										
Eastern Shore	19	700	11	571	-	-	20	-	-	20
Southeastern	20	1,000	9	384	-	-	13	-	.53/	13
North Carolina:										
Northeastern	21	700	6	256	-	-	15	-	-	15
Total		36,700	346	15,854						

1/ Bassus agilis.

2/ Bassus agilis and Pyraustomyia penitalis.

3/ Pyraustomyia penitalis.

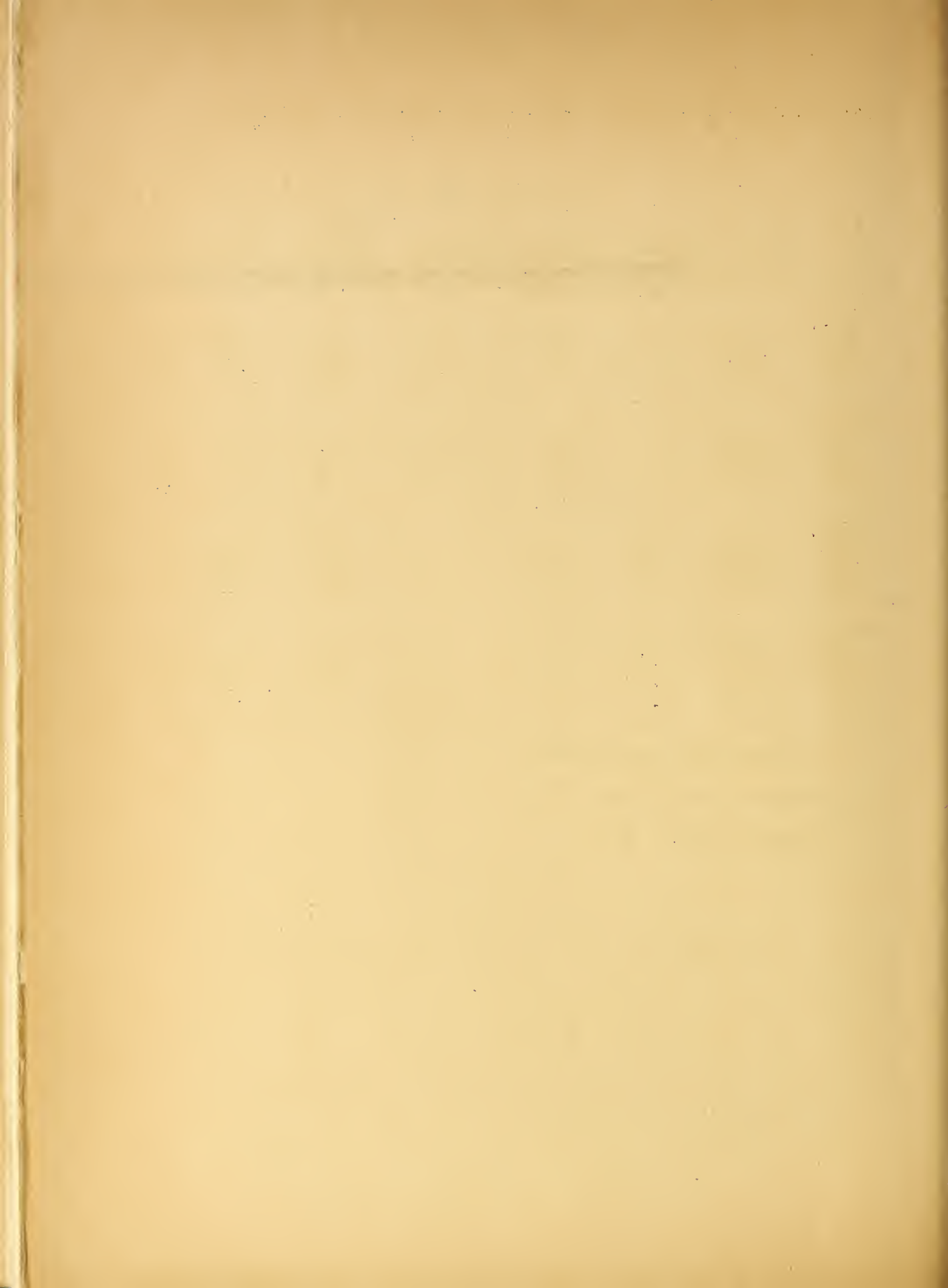
Table 3.--The status of European corn borer parasites in four areas in southern New England in the fall of 1945, 1946, and 1947

Area and year	Number of borers observed	Percentage of borers parasitized by					All species
		<u>Chelonus annulipes</u>	<u>Horogenes punctorius</u>	<u>Lydella grisescens</u>	<u>Macrocentrus gifuensis</u>	Native species	
Area 1:							
1945	1,252	0.0	6	0.6	24	0.1 <sup>1/</sup>	31
1946	1,297	0	5	.5	23	.8 <sup>2/</sup>	29
1947	1,176	0	3	.3	22	0	25
Area 2:							
1945	1,419	0	11	1	4	0	16
1946	1,429	0	14	.6	5	1 <sup>2/</sup>	20
1947	1,431	0	6	.2	6	0	12
Area 3:							
1945	1,598	.4	.3	.6	28	0	29
1946	1,485	.9	.2	1	36	.4 <sup>2/</sup>	39
1947	1,349	.3	.1	.7	20	.1 <sup>3/</sup>	21
Area 4:							
1945	1,854	.2	5	.5	18	0	24
1946	1,871	.1	5	.7	22	.9 <sup>2/</sup>	28
1947	1,790	.1	1	.2	24	.1 <sup>3/</sup>	25

1/ Macrocentrus robustus Mues.

2/ Aplomya caesar Ald.

3/ Bassus agilis Cress.





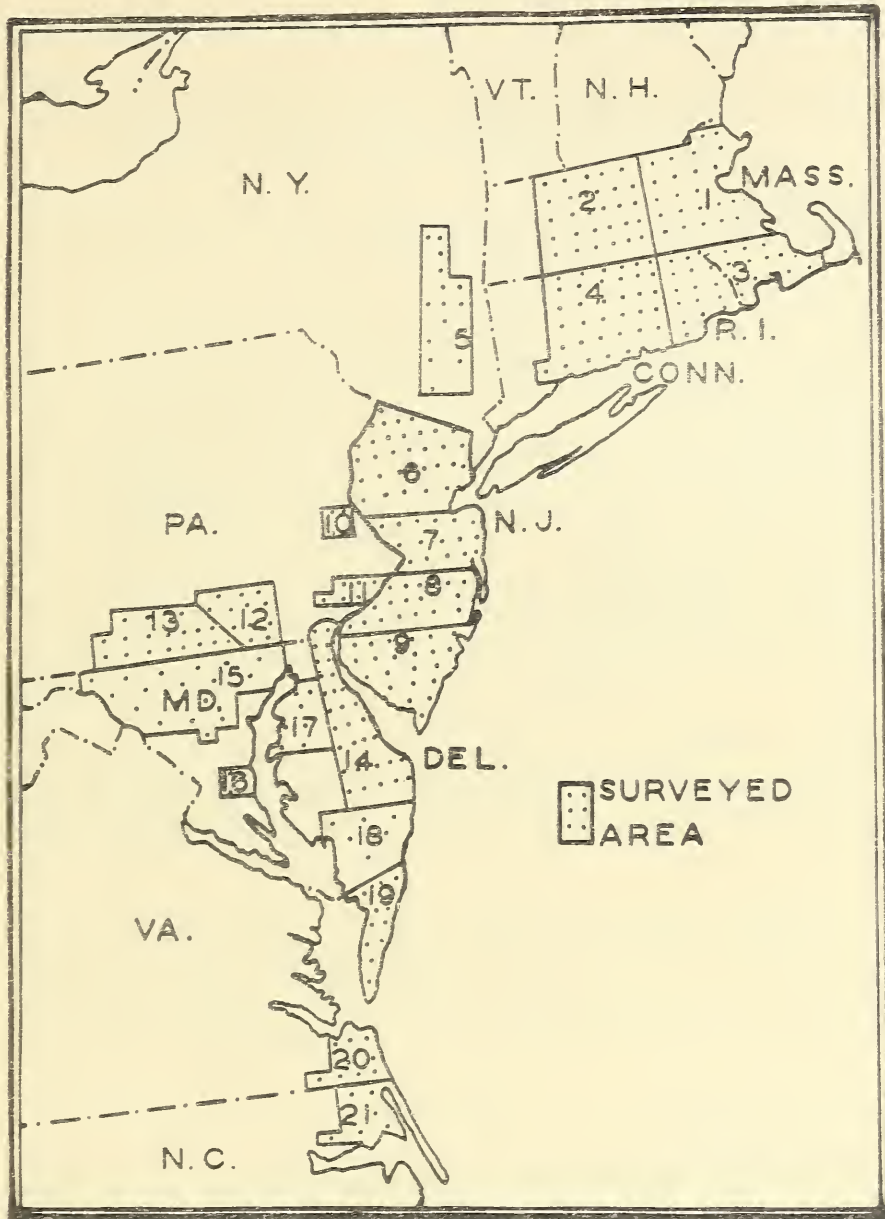


Figure 1. Areas in the Eastern United States where area-wide parasite field status collections were made in the fall of 1947.

UNIVERSITY OF TORONTO LIBRARY  
AUG 26 1948  
100 St. George Street  
Toronto, Ontario