

INSECT ENEMIES OF THE COTTON BOLL WEEVIL¹

By EDGAR F. GROSSMAN

During the summer of 1927, the writer visited a number of cotton fields in Florida, Georgia and Alabama, with the express purpose of determining the abundance of the insect enemies of the cotton boll weevil (*Anthonomus grandis* Boh.). Infested cotton squares were collected from sixteen representative fields and forwarded to the insectary at Gainesville, Florida, where the boll weevils and their parasites were hatched and recorded².

In 1930 the experiment was repeated. Cotton squares were collected from twenty-four fields, three of which (Alachua, La-Crosse and Tallahassee) were visited twice in order to determine whether or not the number of parasites increased during a three-week period. The total number of parasites recovered was extremely low, 47 having hatched from 11,559 cotton squares whereas, in 1927, 387 parasites were recovered from 8,451 squares. There were fewer boll weevils also, 1,609 or 13.9 percent emerging from 11,559 squares as compared with 2,453 or 29.0 percent emerging from 8,451 squares in 1927. The cotton yield, however, was practically the same as that of 1927, ranging from one-quarter to three-quarters bale per acre. Two of the fields were poisoned, one four miles north of Americus, Georgia, and the other six miles south of Madison, Florida, but an appreciable gain in the cotton yield was not obtained. The field at Americus, however, yielded but few boll weevils and parasites and the one at Madison yielded none.

The field at Tallahassee, Florida, which was visited on July 22, and again on August 15, showed an appreciable reduction in boll weevil infestation though no parasites were recovered. The field at LaCrosse, Florida, showed a slight increase in weevil infestation and decrease in number of parasites recovered, and the field at Alachua yielded fewer weevils and parasites on August 5 than on July 16. As a consequence of these tests, no definite indication of an increase or decrease in parasitism during this three-week period was obtained. The dry weather prevalent throughout the cotton belt during the summer of 1930 undoubtedly checked both weevil and parasite propagation, though the recovery of so few parasites may also be ascribed, at least in part,

¹Contribution from the Department of Cotton Investigations, Florida Agricultural Experiment Stations.

²Edgar F. Grossman, "Control of the Cotton Boll Weevil by Insect Enemies". Science, No. 1787, Vol. LXIX, pp. 361-62. March, 1929.

to the relatively light weevil infestation of 1929 which would bring about an ebb in the parasitic cycle. Messrs. Fenton and Dunnam³ also found a reduction in the number of parasites which were recovered in 1925, when fewer specimens were recovered than in 1924 or 1926.

1927

Locality	Date collected 1927	Squares examined	Boll weevils hatched	Para-sites hatched	Percent hatched boll weevils	Percent hatched parasites
Campbellton, Fla.	July 30	190	119	1	62.63	0.53
Americus, Ga.	July 7	765	381	7	49.80	0.92
Greenville, Fla.	Aug. 1	405	190	37	46.91	9.14
LaCrosse, Fla.	July 18	540	207	35	38.33	6.48
Thomasville, Ga.	July 5	450	170	0	37.78	0
Bonifay, Fla.	Aug. 1	390	185	5	34.62	1.28
12 Mi. S. of Dothan, Ala.	July 30	413	187	80	33.17	19.37
Alachua, Fla.	July 18	900	282	58	31.33	6.44
6 Mi. S. of Greenville, Fla.	Aug. 1	402	102	3	25.37	0.75
4 Mi. W. of Campb'l't'n, Fla.	July 30	348	87	16	25.00	4.60
Hurtsboro, Ala.	July 9	1100	266	18	24.18	1.64
4 Mi. N. of Madison, Fla.	July 29	376	75	18	19.95	4.79
Dothan, Ala.	July 30	316	56	9	17.72	2.85
Columbus, Ga.	July 8	900	150	8	16.67	0.89
5 Mi. N. of Madison, Fla.	July 29	574	83	24	14.46	4.18
6 Mi. S.E. of Madison, Fla.	July 29	382	13	68	3.40	17.80

1930

Alachua, Fla.	July 16	342	194	10	56.73	2.92
7 Mi. E. of Tallahassee, Fla.	July 22	319	166	0	52.04	0
Newberry, Fla.	Aug. 5	242	121	4	50.00	1.65
5 Mi. S. of Americus, Ga.	July 23	285	118	5	41.41	1.75
Asheville, Fla.	Aug. 15	23	9	0	39.13	0
Madison, Fla.	Aug. 15	173	61	0	35.26	0
LaCrosse, Fla.	Aug. 5	343	117	1	34.11	0.29
LaCrosse, Fla.	July 16	740	238	6	32.16	0.81
Alachua, Fla.	Aug. 5	368	118	8	32.07	2.17
Gainesville, Fla.	Aug. 8	207	43	0	20.77	0
4 Mi. N. of Americus, Ga.	July 23	402	69	4	17.16	0.99
7 Mi. E. of Tallahassee, Fla.	Aug. 15	654	112	0	17.13	0
Graceville, Fla.	July 25	452	69	0	15.27	0
Troy, Ala.	July 24	468	35	1	7.48	0.21
Union Springs, Ala.	July 24	761	55	7	7.23	0.92
4 Mi. E. of Graceville, Fla.	July 25	709	38	1	5.36	0.14
Bonifay, Fla.	July 25	445	13	0	2.92	0
Caryville, Fla.	July 25	447	12	0	2.68	0
Albany, Ga.	July 23	527	10	0	1.90	0
Thomasville, Ga.	July 23	513	5	0	0.97	0
5 Mi. E. of Madison, Fla.	July 22	232	2	0	0.86	0
Sneads, Fla.	July 25	562	3	0	0.53	0
Hurtsboro, Ala.	July 24	475	1	0	0.21	0
6 Mi. S. of Madison, Fla.	July 22	540	0	0	0	0
3½ Mi. W. of Madison, Fla.	July 22	535	0	0	0	0
6 Mi. W. of Columbus, Ga.	July 24	318	0	0	0	0
Campbellton, Fla.	July 25	477	0	0	0	0

There is a natural variation in the percent parasites which are recovered from year to year in the same vicinities and the uniform scarcity of parasites during 1930 is to be expected to occur occasionally. Whether or not this scarcity will tend to precede a year of severe boll weevil damage during the time re-

³F. A. Fenton and E. W. Dunnam, "Biology of the Cotton Boll Weevil at Florence, S. C." Tech. Bul. 112, U.S.D.A. 1929.

quired for the parasites to rebuild their population is problematic. Though the insect enemies of the boll weevil undoubtedly control this cotton pest to a large degree, the exact extent of their beneficial activities cannot be determined without the inauguration of a more extensive study of their population and dissemination.

NOTES ON UTAH COLEOPTERA

GEO. F. KNOWLTON

(Continued from Vol. XIV, No. 4, page 77)

Family CURCULIONIDAE

Rhychites bicolor var. **wickhami** Ckll.

Logan, August 12, 1925 (Knowlton).

Ophryastes sulcirostris (Say)

Logan, 1923 (Knowlton).

Sitona hispidulus (Fab.)

Hooper, July 1929 (Knowlton); Logan, April 17, 1923 (Knowlton); Salt Lake City, June 1928 (Knowlton); Tremonton, July 1925 (Knowlton).

Hypera punctata (Fab.)

Hooper, June 1928 (Pack and Knowlton); Logan, July 1929 (Knowlton); Magna, August 1928 (Pack and Knowlton).

Phytonomus posticus (Gyll.)

Lewiston, May 23, 1923 (Knowlton); Logan, June 1923 (Knowlton).

Phyllotrox nubifer Lec.

Sardine Canyon, May 22, 1923 (Knowlton).

Balaninus utensis Csy.

On apple tree at Orem, August 21, 1929 (Pack).

Calendra granaria (L.)

Logan, September 7, 1929 (Pack).

Family SCOLYTIDAE

Scolytus rugulosus Ratz.

Orem, May 1927 (Pack); Provo, May 1927 (Pack).

Dendroctonus valens Lec.

Logan.