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DISTRIBUTION OF THE EUROPEAN ELM SCALE

ALBERT HARTZELL

On May¹ 27, 1919, an American elm on the Iowa State College grounds at Ames was found to be infested with European elm scale (*Gossyparia spuria*). Since the above date several other Iowa records have been added to our list and a considerable amount of information has been obtained regarding the distribution of this species in the United States and Canada through correspondence with State Entomologists, the U. S. Bureau of Entomology and Agricultural Experiment Station workers in states in which scale was thought likely to occur.

The European elm scale was introduced into the United States from Europe in the latter half of the nineteenth century. The exact date will probably never be known. It was first brought to the attention of the United States Department of Agriculture² by Mr. Charles Fremd of Rye, New York, in June, 1884, who complained that the elms in his nursery were badly infested with a bark louse. The insect in question was finally determined in 1889 from material sent in by Mr. J. G. Jack of Cambridge, Massachusetts. The spread of the species was rapid as was pointed out in 1897 by Lintner³ in his 12th report, representing six states and the District of Columbia, including such widely scattered records as Palo Alto, California, Carson City, Nevada, East Lansing, Michigan and Burlington, Vermont; and it was known to occur along the Hudson from New York City to Troy. Since that time the spread of the insect along the main lines of travel has progressed until now it is found in twenty-seven states, the District of Columbia and the Provinces of Ontario and Quebec.

That infested nursery stock is a contributing factor of great importance in the dissemination of this pest is shown by a study of the accompanying map. Long Island, the Hudson and Mohawk Valleys in the east and the Union Pacific Railway and its branches in the west constitute the main thoroughfare of dissemination.

Gossyparia spuria is a native of Europe where it has been known to science for over a century, and has been reported from England,

¹ Jour. Ec. Ent., Vol. 12, No. 4, p. 351 (1919).

² Howard, L. O., Ins. Life, Vol. 2, p. 35 (1889).

³ Lintner, J. A., 12 Rep. Ins. N. Y., p. 294 (1897).

France, Germany, Bohemia and Italy. It appears to be quite generally distributed throughout the Continent. Its distribution in the United States is closely correlated with the distribution of *Ulmus fulva* and *U. americana*, its more common hosts. Roughly speaking, the red elm (*Ulmus fulva*) occurs from the 100th meridian eastward and southward to Texas and Florida. The American elm has approximately the same distribution except that in western Canada it extends northward to within half a degree of the southern boundary of Alaska. West of the 100th meridian the elms do not normally occur and the spread of the scale beyond the Rocky Mountains has been due no doubt to infested nursery stock.

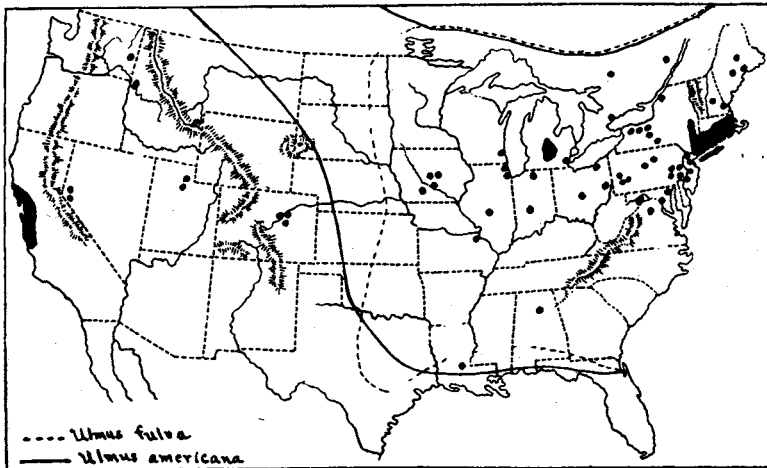


Fig. 31. Map showing the distribution of the European Elm Scale (*Gossyparia spuria*). Curved dotted line represents the limits of *Ulmus fulva*. Curved solid line represents the limits of *Ulmus americana*. Area in which the scale has been reported from many localities represented in solid black. The information regarding the distribution of *U. fulva* and *U. americanus* furnished through the courtesy of Dr. E. N. Transeau.

The distribution of the European elm scale is represented by the accompanying map (Fig. 31) on which are noted over 100 locality records. There are three regions of general distribution: (a) the New England States and Middle Atlantic States, including the Provinces of Ontario and Quebec; (b) the Central States; and (c) California. The New England States and Middle Atlantic States form a region in which the scale is present in greatest abundance. Practically all the records in this region come from the territory between the Potomac and St. Lawrence rivers and include more than half the locality records in this list. In

the Central States the records are fewer and more scattered. California represents the third region of general distribution with a large number of records in the vicinity of Sacramento and Palo Alto. The isolated records of Spokane, Washington, Logan and Salt Lake, Utah, Reno, Nevada, and Denver, Colorado, are examples of infestation along the main routes of commerce which may serve as centers of infestation for the surrounding country. With the exception of Louisiana and Alabama, we have no records from the states south of Ohio river. Negative replies were received from the entomologists of Kentucky, Tennessee, Arkansas, Mississippi, North Carolina, South Carolina, Georgia, and Florida, which would indicate at least that the scale is not present in any numbers. The insect does not seem to have extended its range into the arid region of the southwest, nor is it known to occur in Minnesota, Montana or Oregon. A glance at the map shows that the geographical distribution of the scale does not coincide exactly with the distribution of its hosts. This is especially true in the southern part of its range. While elms occur as far south as Texas and Florida, the insect has very seldom been reported south of Ohio river. On the other hand in California and Nevada, in a region where its hosts do not occur normally, it seems to have found climatic conditions favorable, and is a serious shade tree pest to the introduced elms. Why this insect prefers the American elms to the European species on which it doubtless originated has never been satisfactorily explained.

LOCALITY RECORDS OF GOSSYPARIA SPURIA FOR THE UNITED STATES AND CANADA

Locality	Record	Authority	Locality	Record	Authority
Alabama			Colorado		
(No locality given)		E. H. Hinds	Denver		C. P. Gillette
California			Fruita		G. M. List
Calusa		H. S. Smith	Golden		G. M. List
Modesto		H. S. Smith	District of Columbia		
Palo Alto		H. S. Smith	Washington		J. A. Lintner
Palo Alto		LeRoy Childs	Washington		E. R. Sasscer
Sacramento		LeRoy Childs	Connecticut		
San Rafael		H. S. Smith	Cheshire		W. E. Britton
San Jose		H. S. Smith	Colchester		W. E. Britton
San Jose		E. R. Sasscer	Hartford		W. E. Britton
San Jose		F. B. Herbert	Meriden		W. E. Britton
Santa Clara		H. S. Smith	New Haven		W. E. Britton
Santa Clara Co.		E. R. Sasscer	Sharon		W. E. Britton
Stanford		H. S. Smith	Sound Beach		W. E. Britton
Stanford		E. R. Sasscer	Southington		W. E. Britton
Stockton		H. S. Smith	South Norwalk		W. E. Britton
Ukiah		H. S. Smith	Yatesville		W. E. Britton

Locality	Record	Authority	Locality	Record	Authority
Idaho			New York		
Lewiston (?)		A. L. Melander	Albany		J. A. Lintner
Illinois			Albany		W. O. Hollister
Chicago		C. B. Dull	Athens		E. P. Felt
Chicago		P. A. Glenn	Binghamton		E. R. Sasscer
Springfield		J. G. Sanders	Brooklyn		E. R. Sasscer
Springfield		W. P. Flint	Brooklyn		E. P. Felt
Indiana			Castleton		E. P. Felt
(Northern part)		W. A. Price	Catskill		J. A. Lintner
Indianapolis		H. F. Dietz	Delmar		E. P. Felt
Indianapolis		H. Morrison	Flushing		E. P. Felt
*Iowa			Ghent		J. A. Lintner
Ames		Albert Hartzell	Ithaca		E. R. Sasscer
Des Moines		Albert Hartzell	Locust Valley		E. R. Sasscer
Ontario		F. A. Fenton	Marboro		J. A. Lintner
Waukee		F. A. Fenton	Mechanicsville		E. P. Felt
Louisiana			Mount Vernon		E. P. Felt
Ambler		E. R. Sasscer	New Drop		E. P. Felt
Maine			New York City		E. R. Sasscer
Augusta		E. R. Sasscer	Nyack		E. P. Felt
Castine		J. O. Johannsen	Ogdensburg		E. P. Felt
Orono		J. O. Johannsen	Oyster Bay		E. P. Felt
Maryland			Poughkeepsie		E. R. Sasscer
Baltimore		E. R. Sasscer	Poughkeepsie		W. O. Hollister
Massachusetts			Rhineheck		E. P. Felt
Amherst		C. P. Lonsbury	Rochester		E. P. Felt
Boston		C. P. Lonsbury	Round Lake		E. P. Felt
Brighton		W. O. Hollister	Rye		J. A. Lintner
Brookline		C. P. Lonsbury	Schenectady		E. P. Felt
Cambridge		C. P. Lonsbury	Syracuse		E. R. Sasser
Jamaica Plains		J. G. Jack	Tarrytown		E. P. Felt
Malden		E. R. Sasscer	Tarrytown		E. R. Sasscer
Springfield		E. R. Sasscer	Troy		J. A. Lintner
Michigan			Westbury		E. R. Sasscer
Agr. College		T. D. A. Cockerell	Woodmere		E. R. Sasscer
Agr. College		R. H. Pettit	Ohio		
Detroit		E. R. Sasscer	Cleveland		J. S. Houser
Detroit		W. O. Hollister	Columbus		A. F. Burgess
Detroit		R. H. Pettit	Columbus		J. S. Houser
East Lansing		R. H. Pettit	Marietta		J. S. Houser
Grand Ledge		R. H. Pettit	Ontario		
Lansing		R. H. Pettit	(Southern part)		J. W. Swaine
Pine Lake		R. H. Pettit	Ottawa		J. W. Swaine
Williamston		R. H. Pettit	Toronto		C. J. S. Bethune
Missouri			Pennsylvania		
St. Louis		E. R. Sasscer	Center College		E. R. Sasscer
Nevada			Norwood		E. R. Sasscer
Carson City		S. B. Doten	Oakmont		E. R. Sasscer
Reno		S. B. Doten	Pencoyd		E. R. Sasscer
Reno		R. R. Graves	Philadelphia		E. R. Sasscer
New Hampshire			Pittsburgh		E. R. Sasscer
Boscaven		C. R. Cleveland	Winnewood		E. R. Sasscer
Portsmouth		C. R. Cleveland	Wilkesburg		E. R. Sasscer
New Jersey			Wilkesbarre		E. R. Sasscer
Englewood		E. R. Sasscer	Quebec		
Montclair		E. R. Sasscer	(Western part)		J. W. Swaine
Princeton		E. R. Sasscer	Rhode Island		
South Orange		E. R. Sasscer	Kingston		E. R. Sasscer
			Providence		E. P. Felt

EUROPEAN ELM SCALE

Locality	Record	Authority	Locality	Record	Authority
Utah			Washington		
Ogden		E. R. Sasscer	Spokane		E. R. Sasscer
Salt Lake City		E. R. Sasscer	Spokane		A. L. Melander
Vermont			West Virginia		
Burlington		Prof. Perkins	Harpers Ferry		E. R. Sasscer
Virginia			Wisconsin		
Enola		E. R. Sasscer	Milwaukee		J. G. Sanders

Since the above list was compiled the following additional Iowa records have been noted: Indianola, B. M. Harrison; Des Moines, H. Ness; Story City, F. A. Fenton; Nevada, Albert Hartzell.

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