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FARM GAME SESSION

HISTORY OF THE IMPORTED FIRE ANT IN THE SOUTHEAST

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There are two species of native fire ants—(*Solonopsis geminata* Fabricius) and (*Solonopsis xyloni* Mac Cook)—in the Southeast which so closely resemble the Argentine fire ant (*Solonopsis saevissima richteri* Forel) that not until several years after the South American ant's introduction was it recognized as a newcomer. Even today most entomologists cannot identify the imported fire ant in the field.

There has been some confusion as to the date of first introduction of the Argentine fire ant in the Southeast, but the best information available indicates that it appeared in the Port of Mobile, Alabama, sometime around 1918. Dr. H. P. Loding, an amateur entomologist, was the first to recognize the species. Dr. Loding reported his findings to Dr. William S. Creighton of Harvard University, who was able to collect the ant in 1928. At that time it was confined to a relatively small area in the northwest section of the City of Mobile.

By 1930 this insect had spread inland several miles along the Mobile Bay area to the Gulf Coast in Mobile County and adjoining Baldwin County. By 1935 the infestation had expanded to cover the entire south half of Mobile County, reaching almost to the Mississippi line, and the southwest one-third of Baldwin County. A rapid movement followed and by 1940 all of Mobile and Baldwin Counties were affected along with the southern tips of Washington, Escambia, and Clarke Counties in Alabama, the western one-third of Escambia County, Florida, and the eastern one-third of George and Jackson Counties in Mississippi.

A report by E. O. Wilson and J. H. Eads to the Director of the Alabama Conservation Department in 1949 revealed that the imported fire ant was present in all or part of 10 Alabama, 3 Mississippi and 2 Florida Counties.

In 1958 the Plant Pest Control Division of the U. S. Department of Agriculture listed as infested with imported fire ants 52 counties in Alabama, 45

counties in Mississippi, 26 parishes in Louisiana, 6 counties in Texas, 1 county in Arkansas, 3 counties in Georgia, 13 counties in Florida, and 3 counties in South Carolina.

Dr. John T. George, in his 1958 fire ant report to the Conservation Foundation and New York Zoological Society, indicated that the above described spread seemed to fall within three periods: an initial period of a decade or two (1918?-1932) when the ant became established on about two or three hundred thousand acres within a few miles of the port of Mobile, when natural spread was less than one mile per year; a second period of perhaps two decades (1932-50) when the ant became established on about two or three million acres within 50 miles of Mobile. This was a natural spread of from one to three miles per year; a third, seemingly explosive period from 1950-1958, when the ant became established on about 20 to 30 million acres. Much of this later rapid spread was probably due to the expansion of secondary infestations, transported earlier by car or train or by shipments of soil or nursery stock.

I will not attempt in this paper to go into the biology of the imported fire ant, as this information is available in a number of entomological reports. I would, however, like to mention a few of the earlier studies. In 1949 Bert E. Thomas, who was then Alabama's Director of Conservation, employed two entomologists, E. O. Wilson and J. H. Eads, to make a study of the imported fire ant in Alabama. Their study was outlined in a special report to the Director on July 16, 1949.

In 1949 and 1950 the State of Mississippi conducted experiments and observations on the imported fire ant in the vicinity of Artesia, Mississippi, as reported by H. B. Green in the November 28, 1952, issue of the Journal of Economic Entomology.

In October, 1953, George H. Culpepper reported on surveys conducted by personnel of the Bureau of Entomology and Plant Quarantine. This paper lists southeast infestations from 1949 through 1953.

There are at least three early fire ant control programs worthy of note.

The first was carried out in Baldwin County, Alabama, in 1937 by the Alabama Department of Agriculture and Industries and the Public Works Administration, but the campaign was soon abandoned and the effects were short lived.

In the spring of 1948 the Mississippi State Legislature appropriated $15,000 for the control of the imported ant in that State. This project, like its predecessor in Alabama, was soon abandoned.

In 1949 the Alabama Department of Conservation distributed chlordane to landowners in infested areas but the project proved too costly to continue.

Control measures from 1949 to 1957 were limited to individual landowners through mound applications or by fertilizer containing insecticides.

In 1957, Agriculture officials, large land-owners, cattlemen, and insecticide groups pressured congress into providing an appropriation in the Department of Agriculture budget for a fire ant eradication program. One has only to read the information and the misinformation presented at the congressional hearing leading to the appropriation of funds for the eradication program to see that fire ant eradication came as a result of large landowners seeking Federal subsidy to help control the fire ant as a nuisance rather than as an effort to rid an area of an economic pest. Certainly after modifications discussed later in this paper, this can no longer be termed as an eradication program.

What about this Argentine fire ant? In many quarters it is painted as the blackest of villains and a threat to the life and economy of man. Let's look at some facts.

Dr. Kirby Hays, an Auburn entomologist, was sent to Argentina by the State of Alabama to study this ant in its native habitat. He found that the people of Argentina considered the insect entirely beneficial in that it destroyed a number of economically destructive insects. Upon returning to Auburn, Dr. Hays began a study of its food habits. He found that this ant feeds almost entirely upon insects, many of which are considered economic pests in Alabama. He also found that the Argentine fire ant turned cannibalistic and ate its own

kind before attacking most agricultural crops. In his field study he found that at no time were the ants observed feeding on plants in their natural environment.

Dr. D. G. Gill, State Health Officer of Alabama, has stated that there has never been recorded in Alabama a death resulting from the bites of fire ants and that medical cases resulting from the bites of fire ants are so incidental that they are not worthy of the record.

In a recent survey of the Cooperative Economic Insect Report of the Plant Pest Control Division of the U. S. Department of Agriculture issued in May, 1958, only two states, Louisiana and Mississippi, listed the fire ant among their twenty most important economic insects, and then far down the list in importance, grouped with insects which were a nuisance to man and domestic animals rather than agricultural crops.

Dr. John L. George, in his report to the Conservation Foundation, well sums up the fire ant situation—"It is evident that although much is known about the fire ant and still more is alleged, there is considerable misinformation as well. Unfortunately, most of the observations made by the research entomologists of the U. S. Department of Agriculture have never been published." I would like to add that many unsubstantiated statements have been widely publicized instead.

When the facts are in, I am sure we will all agree with Dr. F. S. Arant, Head of the Zoology-Entomology Department at the Alabama Polytechnic Institute at Auburn, that the fire ant is a nuisance but not an economic pest.

For just a moment let us look at the eradication program in Alabama as originally set out and as it has been modified.

The program began as an eradication program on all areas where infestations occurred, with a coverage of all lands "regardless of land ownership or use." Later this program was modified to a solid coverage of fields and pastures with spot treatments in woodlands.

The program was further modified in Alabama on October 9, 1958, by the State Fire Ant Committee with the approval of the Plant Pest Control Division of the U. S. Department of Agriculture as follows:

"The farmer will not be required to participate in the treatment costs of woodland or other long time non-productive areas. He will be expected to cooperate only in the cost of treating his open lands. The cost of treatment in woodland areas will be shared between the State and Federal governments. It is not anticipated that broadcast treatments will be required to any appreciable extent in wooded areas. Extensive inspections indicate that the fire ant prefers open, sunny areas. In woodlands they are found, for the most part, along roadways and other places of more general exposure to sunlight. It is believed by the treatment of such areas, when found to be infested, that the ant may be eliminated from woodland areas.

Programs will be developed on a block or community wide basis and experience has indicated that the cost of treatment approximates $3.00 per acre.

The following alternatives are available for farmer participation:

1. To deposit one dollar with his local committee for each acre of his open land in the treatment area.
2. To apply the insecticide either as a separate operation or in connection with his other farm practices to all of his open land, the insecticide to be supplied to him by the other participating agencies.
3. To defray all expenses connected with the treatment of 1/3 of his open land, the other 2/3 to be treated by the other cooperators at no additional cost to him.

In the development of block or community programs, the alternative may be selected on an individual basis rather than on a block basis. The committee is urged, however, to block up areas that will be treated by each of the methods available so as to effect economy in the over-all costs of the program."

If the fire ant program was ever an eradication program, which most of us have doubted from the beginning, it can no longer be so classified. It is now a control program, pure and simple.

The Alabama Department of Conservation has stated that the latest modification of the program was an admission by Agricultural officials that the previous methods employed were not sound. Further, the Department has questioned the advisability of turning over powerful insecticides to farmers for application when technicians of the Agriculture Departments have been unable to apply them without widespread damage to wildlife and domestic animals. The latest modification requires that a farmer sign a statement that if there is damage resulting from application of insecticides he will release the Department of Agriculture from responsibility. Where does wildlife go from here?

At the end of my paper I have prepared a bibliography of articles and news releases on the subject of fire ants. This list is by no means complete. I would like to suggest that a committee of this organization undertake the tasks of compiling a complete list and of keeping it up to date on all materials relating to the fire ant for future reference use.

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THE TOXICITY OF SOME ORGANIC INSECTICIDES TO FISHES *

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During the past fifteen years a large number of new organic pesticides have been developed and placed on the market. Because many of these are highly toxic to insects and have a residual action, their use has experienced a phenomenal growth. Hundreds of millions of pounds of toxic formulations are used each year for the control of pests and other nuisance organisms. So great has been the success of these materials that control agencies have begun to think in terms of eradication for some vectors and pests. That these new organic

* This paper is a summary of the results of investigations conducted by the Public Health Service on the toxicity of organic insecticides to fishes and other aquatic organisms.