

Report on the Outbreak of Buffalo Gnats in Mississippi and Arkansas 1931

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The gnat outbreak this year seems to have been of unusual severity, with stock losses listed in Table 1.

Table 1. Areas of Mississippi and Arkansas affected by gnat outbreak during 1931 and reporting type.

Areas Affected and Losses 1931			
State	County	Number of animals affected (C = cow, H = horse, M = mule)	Reporting type NR = not reported AL = actual loss (Red Cross tabulation) E = estimate (county agents and veterinarians)
Mississippi			
	Arkansas		NR
	Bolivar	2 M	E
	Coahoma	207 M&H	AL
	Lee	25 M&H	E
	Monroe		NR
Arkansas			
	Phillips	300-400 M&H, 1C	E

In Coahoma County, Mississippi, there seemed to be no record of mules dying from gnat attacks during at least the past eighteen years, although gnats are present in small numbers each spring.

In Arkansas, I was informed that a few gnats are present every year in the area in which the animals were killed, but stock was rarely lost. Gnats are also troublesome to farmers each spring along the White and St. Frances Rivers as far north as Osceola, Marietta, and Jonesboro, and it is necessary most years to keep animals sprayed. No trouble has been experienced in these localities this year.

On the east of Coahoma County in Tallahatchie County along the Tallahatchie River, the gnats are quite bad this year and a few mules were reported as dying but I could not get any authentic information on the loss. The County Agent at Charleston believed the deaths were due to other causes.

The shaded portion of the accompanying map shows the approximate area in which stock was lost this year.

Time of Appearance

In Phillips County, Arkansas, the gnats were noticed to be bad on the afternoon of April 2nd, and reports of stock losses were made on the third and fourth. In this region the county agent informed me that farm work had been set back about two weeks on account of the pests.

The gnats were reported to have appeared in swarms in Lee County, Arkansas, on April 7th, and most stock losses occurred on April 8th and 9th. The losses here were confined to the southwest portion of the county; none being reported as Far East and north as Marianna. About nine days were lost to field work in this area.

In Coahoma County, Mississippi, the gnats were first noticed on the afternoon of April 6th. Stock began dying early on the morning of the seventh and most of the deaths occurred during the next two days.

It would appear then that the gnats first became abundant in Phillips County and migrated north and south from this point. In Mississippi no stock was lost except within an area about twenty miles long and from eight to ten miles wide along the east bank of the Mississippi River, although the gnats were common all over Coahoma County. The people in Coahoma County said that the gnats came in with a west or northwest wind and were dispersed some time later by south winds.

Duration of Attack

The gnats persisted in abundance in the affected areas for a period of about nine days to two weeks. For some reason or another it appears that practically all the deaths due to gnat attack occur when they first appear. This has been speculated upon as follows: Do the gnats dissipate their venom during their first feedings? Are some animals able to quickly establish immunity? Are some animals naturally immune and others not? Are the protective measures, greasing, housing, and smoking responsible for saving stock after the surprise attack is over? The veterinarians all seemed to agree that nearly all mules and horses attacked were affected to some extent; that is they appeared weak and listless for a few days after the onset. With regard to the condition of the animals it appears that good mules withstand the attacks better than poor ones but all poor mules attacked do not die nor are all good ones able to withstand the effects of the bites. The terms "good mules" and "poor mules" have greatly different meanings to different individuals. It seems probable; however, that the stock in general in this section of the country is greatly below what is usually regarded as good working conditions. This is due to a large extent to the shortness of the crops last year, due to the drought and the low price received for the cotton crop.

Mode of Attack

When arriving in swarms the gnats are said to cover the animals, but when less abundant they seem to choose the ears, under the jaws, between the legs and on the belly, rather than the sides and back. Long haired animals are worse attacked than clipped or short haired animals. The insects in alighting grasp a hair and quickly run down to the skin where they immediately insert their proboscis and start sucking blood. The loss of blood from an animal when being attacked by myriads of gnats must be considerable and whether animals are killed by loss of blood or by a poison injected by the gnat while feeding is not known. The veterinarians seem to think it is a poison. I was informed that Dr. Kinsley of the Kansas City Veterinary College had made tests on gnats to ascertain if poison was present and reported the finding of a poison similar to rattlesnake venom. I am writing Dr. Kinsley to ascertain if he was correctly quoted.

It is continually reported that the gnats kill by entering the nasal passages, getting into the lungs and causing mechanical pneumonia. This theory was discounted by most veterinarians, although the State Veterinarian of Arkansas recommended the tying of sacks over the noses of exposed animals as a remedy. I heard of two men who had autopsied mules to see if gnats were in the lungs, and was able to locate one of them (Dr. Hayes of Helena, Arkansas.) This veterinarian informed me that he had found a handful of gnats in the bronchial tubes of a mule at the point of bifurcation. He did not believe, however, that the gnats kill animals by entering the lungs. The reason this theory was generally discounted was that when animals are suffering from gnats they always have a subnormal temperature, while pneumonia would give them fever.

I was told by several that they believed the gnats only entered the nasal passages after an animal had become so weakened as to be unable to blow his nose, that is that he was so far gone as to be able to offer no resistance whatever and his dying gasps drew the gnat into his nose.

Animals suffering from gnat attacks show all the symptoms of colic, having low pulse and general paralysis of the intestinal tract, with gas formation and bloating. It was explained to me that this condition could cause low pulse and death by the diaphragm being pressed against the heart do to the flatulence in

the abdomen. The mucous membranes are generally pale, showing an anemic condition, the skin cold and inelastic and the blood thickened.

Treatment

The general treatment was to treat affected animals for the local symptoms, that is, those of colic, by giving stimulants such as strychnine, nitroglycerine, camphorated oil, whiskey, etc., and by attempting to relieve the gas conditions in the abdomen. Veterinarians generally agreed that animals suffering badly from gnat poisoning could rarely be saved by any treatment they were aware of, but animals which were treated in time, or were less seriously affected could be pulled through by their treatment.

At Helena, Arkansas, Dr. Barber claimed to have had considerable success in saving mules suffering from gnat poisoning by giving them, in the jugular vein, a dose of twenty grams of potassium dichromate mixed in one hundred cc of water. He could not or did not give me any clue as to the basis for this treatment and I was unable to get an explanation of it from other veterinarians. Dr. Barber went on to say that gnats would not bite animals in which he had injected potassium dichromate!!

Location of Breeding Places

I was unable to exactly locate the breeding places of the gnats causing this outbreak. I examined the Mississippi River and some smaller running streams in the swamps west of Farrell and Rena Lara, Mississippi, without result.

I examined the Sunflower River in the vicinity of Clarksdale, Mississippi, without result. At Clarendon, Arkansas, I examined the White River by boat for a few miles below the town, and on the exposed vegetation which had been inundated some time previously I found what appeared to be gnat pupal casts, but they were all badly broken. I could find no larvae at all. Adult gnats were abundant along the river. I should have spent more time along this river as it seems very likely that it is the breeding place. I intended getting in to it again in the vicinity of Elaine but on account of the bad weather and impassable roads through the swamp, which in that vicinity is from fifteen to twenty-five miles wide, and also receiving no assurances that I could find a boat if I reached the river, I did not go. I could have reached the river from the west side via Clarendon, Stuttgart, and St. Charles but as I considered it might take several days

to actually locate the breeding territory from that point I did not attempt it. It seems probable, however, that the White River is concerned, because observers generally agreed that the gnats came into the affected territory with a west wind or north-west wind. They appeared in Phillips County, Arkansas, on April 3rd and 4th and to the east in Coahoma County, Mississippi, on the 6th and 7th. A strong south wind a few days later was credited with dispersing the gnats.

I examined the Tallahatchie River and Cassidy Bayou to the east of Clarksdale and found abundant evidence of gnat emergences in the river, but none in the bayou. The willows and debris in and above the river were covered with pupal casts. Although gnats were abundant in this locality no stock was lost this year, and it would appear unlikely that gnats from this source had anything to do with the scourge farther west.

Condition of Rivers

There have been no floods in this territory this spring. However, during the latter part of March the water was about six feet higher than at present. This did not put the rivers out of their banks. If the amount of vegetation in the water has anything to do with gnats emerging in numbers, it may be that very low stages of the rivers last year, which allowed willows and other brush to grow thickly in their channels provided a condition this spring similar to that of an overflow year, as the rivers rose sufficiently to cover this vegetation. As in 1928, when I examined the Tallahatchie River, I found gnat skins only on vegetation which was or had been submerged in the swift water in the channel. Of course my examinations have not been extensive enough to say that they have not been found elsewhere.

Methods Used in Combatting the Outbreak

In the badly infested areas farmers generally brought their mules to the barn. It was usually necessary to do this as the animals became uncontrollable in the field. The mules were sprayed or swabbed with preparations, usually consisting of motor oil, with tar and a little kerosene for thinning. Considerable quantities of "gnat oils" prepared by commercial chemical houses and by druggists and others, were used. Persons who had darkened their barns when possible, built smokes inside and kept the animals inside.

Others without barns built smokes in the barnyard and the animals would stand in the smoke to get some relief from the insects. In treating badly affected animals veterinarians usually treated for local symptoms, as no specific treatment for gnat poisoning (or whatever it is) is known.

I concluded from conversations with veterinarians and others, that the reason so much stock was lost was the failure of farmers to cease work and apply the remedies immediately upon the appearance of the gnats. That is, the animals were worked until badly bitten and then the remedies applied. Gnats are present in this territory usually sparingly each year, and are given little consideration, so that the farmers did not become alarmed when they appeared this season.

Several men who lost no stock seemed to be of the opinion that the losses were largely preventable by the above measures; others who lost stock claimed that they had cared for their animals, and the reason some persons lost no stock was because the gnats were not as abundant in one place as another.

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