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**Cooperative
State-Federal**

**TICK ERADICATION
ACTIVITIES**

Fiscal Year 1972

415248

CATTLE FEVER TICK SITUATION

June 1972

Prepared by

Veterinary Services

Animal and Plant Health Inspection Service

U.S. Department of Agriculture

Federal Center Building

Hyattsville, Maryland 20782

COOPERATIVE STATE-FEDERAL TICK ERADICATION ACTIVITIES, FISCAL YEAR 1972

*[*Ixodides, livestock]*

The Tick Eradication Program

Cattle fever ticks, *Boophilus annulatus* and *Boophilus microplus*, spread cattle tick fever (*bovine piroplasmosis*).

An all-out State-Federal cooperative eradication program was instituted by the United States Department of Agriculture (USDA) in 1906. In 1943, 37 years later, the tick had been eradicated from the United States except for a narrow buffer zone under Federal and State quarantines along the Texas-Mexico border. There, reinfestations occur, and an active program is required to prevent spread into adjacent areas. Reinfestations have also occurred in California and in Florida from time to time. But vigilance and prompt eradication measures have eliminated the outbreaks. Keeping the ticks out of the United States is a major part of the effort against cattle fever ticks.

The eradication program includes inspection, quarantine, and dipping of infested and exposed animals and animals from infested or exposed premises.

National Tick Sureillance Program

A detailed report, APHIS 91-8, "National Tick Surveillance Program, Calendar Year 1971," was published in November 1972. This report indicated that during calendar year 1971, 4,247 tick survey collections were made and identified. Of these collections, 2,326 were from cattle, 483 from dogs, 824 from horses or mules, 210 from zoo animals and miscellaneous hosts, 227 from native wildlife, and 177 from animals offered for importation.

Table 1 lists exotic ticks and certain other parasites that were collected in the United States in fiscal year 1972 and the hosts on which these parasites were found.

Parasite Identification and Confirmation

Emphasis on the importance of collecting ticks from all livestock species for identification continued during fiscal year 1972. A total of 2,618 collections of ticks were received and identified at the Veterinary Services Diagnostic Laboratory, Parasitology Section, Beltsville, Md. The laboratory also identified 341 mite specimens and 244 miscellaneous (lice, grubs, fleas, etc.) specimens.

Approximately 27,200 collections of suspected screwworm larvae were received and identified at Beltsville and at the Veterinary Services Screwworm Data Center, Mission, Tex. Of these, 23,244 collections were identified as screwworms, and the remainder were classified as various species of blowfly larvae.

Table 1.—Exotic ticks and certain other parasites collected

State or area	Date	Parasite	Host and remarks
Arizona	July 1971	<i>Dermacentor albipictus</i>	2 collections from cattle from Sonora, Mexico. Collected at Douglas. ¹
	June 1972	<i>Dermacentor albipictus</i>	2 collections collected at Nogales. ^{1,2}
California	July 1972	<i>Octobius megnini</i>	Bovine border stray from Mexico.
		<i>Ixodes scapularis</i>	Bovine border stray from Mexico. Both collected at San Diego. ¹
Colorado	June 1972	<i>Dermestes vulpinus</i> (skin beetle)	Collected from wooden crate used to ship trophy hides. Collected at Denver. ¹
	June 1972	Dermestidae (skin beetles) <i>Tribolium</i> sp. (flour, dried fruit and cereal beetles)	Collected from burlap bags containing excelsior packing. ¹
	June 1972	<i>Sitophilus oryzae</i>	An introduced weevil that damages stored grain.
Florida	October 1971	<i>Octobius megnini</i>	Horse from Lima, Peru. Collected at Miami. ²
Georgia	November 1971	<i>Acaridia columbae</i> (common nematode of pigeons)	Pigeon from France. ²
Idaho	May 1972	<i>Amblyomma dissimile</i>	Boa constrictor from Colombia, South America. Collected in Latah County. ³
Illinois	September 1971	<i>Amblyomma dissimile</i>	Boa constrictor from Colombia, South America. Collected at Lincoln Park Zoo. ⁴
	September 1971	<i>Amblyomma javanense</i>	Pangolin from Bangkok, Thailand. Collected at Lincoln Park Zoo. ⁴
	September 1971	<i>Amblyomma varium</i>	Two-toed sloth from Peru, South America. Collected at Lincoln Park Zoo. ⁴
	September 1971	<i>Ctenocephalides felis</i> (cat flea)	Monkey from South America. Collected at Lincoln Park Zoo. ⁴
Montana	April 1972	<i>Dermestes maculatus</i> (skin beetle)	Cock feathers imported from India. Collected in Lewis and Clark County. ¹
New Jersey	July 1971	<i>Rhipicephalus evertsi evertsi</i> <i>Rhipicephalus evertsi mimeticus</i>	Zebra from Africa. Collected at Clifton, New Jersey. ²
	July 1971	<i>Rhipicephalus evertsi mimeticus</i>	Miscellaneous zoo ruminants from South-West Africa. Collected at Clifton, New Jersey. ²
	August 1971	<i>Rhipicephalus pulchellus</i>	Zebra. Collected at Clifton, New Jersey. ²
	September 1971	<i>Strongylus asini</i>	Zebra from South-West Africa. Collected at Clifton, New Jersey. ²
	April 1972	<i>Rhipicephalus pulchellus</i>	Zebra. Collected at Clifton, New Jersey. ²
	April 1972	<i>Rhipicephalus evertsi</i>	Zebra. Collected at Clifton, New Jersey. ²
New York	August 1971	<i>Amblyomma javanense</i>	Pangolin from Bangkok, Thailand. Collected at John F. Kennedy Airport by Fish and Wildlife personnel.

See footnotes at end of table.

Table 1.—Exotic ticks and certain other parasites collected—continued

State or area	Date	Parasite	Host and remarks
New York	May 1972	<i>Rhipicephalus evertsi</i>	Zebra from South-West Africa. Collected at Clifton, New Jersey. ²
Oregon	July 1971	<i>Amblyomma sparsum</i>	Tortoise originated from South Africa. Collected by State Veterinarian.
	February 1972	<i>Amblyomma dissimile</i>	Iguana from Florida. Collected in Multnomah County. ²
	May 1972	<i>Amblyomma testudinis</i>	Boa constrictor. Collected in Polk County. ³
Pennsylvania	July 1971	Dermestidae (skin beetles)	Poultry feathers from India. Collected in Montgomery County. ²
Texas	July 1971	<i>Boophilus annulatus</i> <i>Boophilus microplus</i> <i>Boophilus</i> sp. (immatures) <i>Dermacentor albipictus</i>	[17 collections. Collected at ports of Brownsville, 16 collections. Del Rio, Eagle Pass, El Paso, 24 collections. Laredo, and Presidio. 31 collections.]
	July 1971	<i>Amblyomma cajennense</i>	Bovine. Collected at Eagle Pass. ¹
	August 1971	<i>Amblyomma ovale</i>	Dog. Collected in Kendall County by County agent.
	September 1971	<i>Amblyomma</i> sp.	Lizard from El Salvador, Central America. Collected at Houston. ²
	February 1972	<i>Dermacentor</i> sp.	Bovine offered from import. El Paso. ¹
	February 1972	<i>Rhipicephalus sanguineus</i>	Bovine offered for import. Eagle Pass. ¹
	January 1972	<i>Otobius megnini</i>	Equine offered for import. El Paso. ¹
	April 1972	<i>Amblyomma maculatum</i>	Bovine offered for import. Brownsville. ²
	May 1972	<i>Amblyomma maculatum</i>	Bovine offered for import. Brownsville. ²
Virgin Islands	January 1972	<i>Amblyomma variegatum</i>	6 collections from sheep and goats on 2 premises on St. Croix.

¹ Collected by a Veterinary Services inspector, USDA.² Collected by a Veterinary Services veterinarian, USDA.³ Collected by a veterinary practitioner.⁴ Collected by a zoo veterinarian or other zoo personnel.

Chemical Analyses

During fiscal year 1972, the Chemical Section of the Veterinary Services Diagnostic Laboratory at Beltsville actively supported field activities and, in addition to tissue residue work, performed quantitative analyses on the following samples:¹

Toxaphene -	9,330 (Field Samples)	Delnav -	354	Dursban -	9
Toxaphene -	920 (Emulsion Concentrate)	Imidan -	114	Ronnel -	6
Co-Ral -	996	Ciodrin -	15	Arsenic -	3

In addition, chemicals for 11,880 arsenical field tests and 140 lime-sulfur tests were prepared, standardized, packaged, and mailed to the field. Emulsion stability tests were run on seven toxaphene concentrates.

Active Program Continues in Texas

Because the territory in Mexico along the lower Rio Grande River is tick-infested, ticks carried by Mexican animals illegally entering the United States, reinfest Texas regularly. The River, as the international boundary, is not an effective barrier against such illegal movements (see table 2).

The systematic eradication area, under Federal and State quarantine, extends from Del Rio, Tex., to the Gulf of Mexico, approximately 500 miles. This zone is patrolled by Veterinary Services inspectors who, in cooperation with the Texas Animal Health Commission, work to reduce the introduction and prevent the dissemination of the ticks. The areas under quarantine in Texas include parts of Cameron, Hidalgo, Kinney, Maverick, Starr, Val Verde, Webb, and Zapata Counties.

Of the 51 tick-infested herds in the systematic area, 22 were found by apprehension and inspection of stray livestock; 11 at dipping and/or inspection prior to movement; three through 14-day or other routine inspections; two as a result of mingling of livestock; six by pasture inspection; four by chute inspection; and three by pen inspection.

Of these 51 infestations, 22 resulted from tick-infested livestock straying from Mexico and one from intermingling of livestock. It was not possible to identify the source of 28 infestations.

Of the 10 infested herds found in the final area (outside the area under Federal quarantine), three were found on pasture inspection; one on 14-day or other routine inspection; four on dipping or inspection prior to movement; one by tracing from infected or exposed premises; and one on continual surveillance of premises released from quarantine. The source of the 10 infestations in the final area was not determined.

There were 1,173 lots of ticks submitted to the Parasitology Section of the Veterinary Services Diagnostic Laboratory for identification; 6 skin scrapings and 369 lots of screwworm larvae were also submitted by the tick force. Of the ticks submitted, 115 were *B. microplus*.

¹Trade names are used in this publication solely for the purpose of providing specific information. Mention of a trade name does not constitute a guarantee or warranty of the product by the U.S. Department of Agriculture.

Table 2.—Tick eradication activities in systematic and final areas of Texas

Activities	5-year average		5-year average		Fiscal years			
	1952	1958-1962	1963-1967	1968	1969	1970	1971	1972
<u>Inspected for ticks</u>								
Systematic area ¹	<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>
Herds or lots	32,363	35,976	45,211	36,441	33,268	41,151	46,962	44,874
Livestock	558,809	774,606	1,268,839	934,416	775,724	806,926	680,360	709,905
Final area ¹								
Herds or lots	12,011	14,092	17,890	15,277	15,775	19,857	28,111	29,225
Livestock	168,088	297,008	473,002	395,744	354,099	558,057	963,650	1,020,695
<u>Dipped or sprayed for ticks</u>								
Systematic area								
Herds or lots	13,845	10,070	12,491	13,587	14,731	14,482	15,751	14,840
Livestock	81,685	54,826	79,788	65,484	79,103	71,695	84,214	² 80,279
Final area								
Herds or lots	113	473	702	877	1,277	1,367	4,282	² 8,803
Livestock	1,323	2,348	4,061	3,441	25,845	30,843	54,206	72,758
<u>Intrastate certificates issued</u>								
Number of certificates	14,913	12,930	14,323	14,431	15,727	15,732	15,725	20,951
Number of livestock	57,704	80,362	102,529	62,297	70,368	70,821	74,259	82,048
<u>Interstate certificates issued</u>								
Number of certificates	13	178	33	3	8	3	2	2
Number of livestock	808	12,724	4,305	159	1,334	114	4	7
<u>Herds held for further treatment</u>								
Systematic area	92	10	30	19	46	41	118	³ 51
Final area	0	2	1	3	9	7	54	10
<u>Tick-infested native herds found</u>								
Systematic area	29	9	28	13	32	12	43	⁴ 44
Final area	1	0	1	2	15	7	68	10
<u>Mexican livestock illegally entering United States⁵</u>								
Equine								
Caught	1,873	82	123	92	127	147	232	84
Tick-infested	183	6	5	5	4	20	40	11
Cattle								
Caught	147	38	118	90	67	110	93	⁵ 72
Tick-infested	82	15	34	14	17	20	64	24
Sheep and goats								
Caught	0	1	1	0	0	0	0	0
Tick-infested	0	0	0	0	0	0	0	0
Swine								
Caught	0	0	0	0	0	0	13	0
Tick-infested	0	0	0	0	0	0	0	0

Table 2.—Tick eradication activities in systematic and final areas of Texas—continued

Activities	5-year average		5-year average		Fiscal years			
	1952	1958-1962	1963-1967	1968	1969	1970	1971	1972
	<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>
Exposures to clean premises	108	26	33	16	46	26	136	91
Re-exposures to held premises . .	73	3	2	1	1	8	8	6
<u>U.S. livestock straying into Mexico and returning</u>								
Caught	7	16	31	16	13	28	20	39
Tick-infested	0	0	1	0	0	0	0	0
<u>Importation of livestock from tick-infested areas of Mexico into Texas</u>								
Offered for importation					692,665	671,824	503,817	819,210
Rejected because of B. spp. infestation				11,707	13,289	24,327	9,936	58,328

¹ The systematic area is that area under Federal quarantine; the final area is that area outside the area under Federal quarantine.

² 8,271 cattle and 24,909 horses were sprayed (rather than dipped). All treatments were with arsenic except as indicated on page 2.

³ Herds held for further treatment include all herds whether infestation was in all cattle in herds or confined to Mexican strays.

⁴ All cattle involved in these herds are native cattle.

⁵ 22 herds of 35 head of tick-infested Mexico livestock were found, all in the systematic area.

Cattle offered for importation from Mexico are carefully inspected for ticks when presented for entry. They must be free of ticks and must be given a precautionary dipping before entering the United States.

Eleven dipping vats met the criteria required for use of organophosphorous dips. In these vats, 840 cattle and 416 horses were dipped with dioxathion (Delnav) permitted dip; also 1,066 cattle and 10,217 horses were sprayed with dioxathion. In two of these vats, 5,340 cattle and 159 horses were dipped in coumaphos (Co-Ral); one horse was sprayed with coumaphos. Seventy-four dipping vats met the criteria required for use of arsenic; and 107,667 cattle and 5,535 horses were dipped in arsenic. Also, 7,205 cattle and 14,691 horses were sprayed with arsenic.

U.S. Virgin Islands and Guam

The U.S. Virgin Islands of St. Croix, St. Thomas, and St. John remain tick-infested and under Federal quarantine. The Island of Guam is also under Federal quarantine.

Ticks collected from cattle on St. Croix were identified on September 1, 1967, as *Amblyomma variegatum* (tropical bont tick): This was the first evidence that the tropical bont tick might establish itself on U.S. territory. This tick is an important pest in many areas of the world and can serve as a vector of diseases affecting animals and man. The tick is a three-host tick with a very broad host range. Generally, the adult tick feeds on larger animals; and the larval and nymphal stages feed on smaller animals such as cane rats, ground squirrels, and mongooses.

A program was immediately undertaken to prevent further spread of the tick on the island, and an eradication program was quickly developed. All livestock on the island were immediately inspected. Later a second inspection was made, and in June 1969 all livestock were inspected again. The infestation was found to be limited to six contiguous premises involving some 2,600 acres. *A. variegatum* ticks were collected from cattle, sheep, goats, dogs, horses, and mongooses.

The *A. variegatum* eradication program on St. Croix included insular quarantines on the infested premises; dipping all livestock at 7-day intervals (changed to 14-day intervals in August 1968) in 0.125 percent coumaphos (Co-Ral); and spraying infested premises with 2 pounds of active ingredient carbaryl (Sevin) per acre.

In August 1971, a tick survey was made on the Islands of St. Thomas and St. John. A total of 26 herds comprising 267 cattle, 23 horses, 121 sheep, and 97 goats was inspected. Numerous *B. microplus* and *D. nitens* but no *A. variegatum* ticks were found.

Table 3.—Collections of ticks made in the U.S. Virgin Islands during fiscal years 1969-1972

<i>Boophilus microplus</i>	1969	1970	1971	1972
Cattle	145	145	21	30
Horses	1	5	0	1
Deer	12	28	18	28
Goats	1	8	0	3
Mongooses	0	1	0	0
Sheep	0	4	2	1
Tick drag	1	0	0	0
Unknown	4	0	6	0
Total	164	191	47	63
<i>Dermacentor nitens</i>				
Cattle	4	14	4	5
Horses	107	94	18	89
Deer	8	12	0	0
Dogs	0	1	0	0
Donkeys	0	1	0	0
Goats	1	3	0	8
Sheep	0	2	0	1
Man	0	0	1	0
Unknown or Environment	0	0	1	2
Total	120	127	24	105
<i>Rhipicephalus sanguineus</i>				
Dogs	9	24	2	1
Environment	0	0	0	2
Total	9	24	2	3
<i>Ornithodoros puertoricensus</i>				
Mongooses	49	10	0	15
<i>Amblyomma variegatum</i>				
Cattle	0	1	1	0
Sheep	0	0	2	3
Goat	0	0	0	3
Total	0	1	3	6

In January 1972, six *A. variegatum* ticks were collected from goats and sheep on two premises on St. Croix.

The aerial spraying was planned and conducted by Special Operations Force, U.S. Department of the Air Force, Eglin Air Force Base, Fla. Sevin was sprayed from jeeps carrying the spraying equipment or from aircraft, depending on terrain. Spraying was completed in December 1968.

The last collection of *A. variegatum* from livestock on a farm had been in April 1968. The survey of St. Croix in May 1969 revealed no *A. variegatum* ticks, and overall results were encouraging. However, on August 7, 1969, a single male tick was found at the slaughterhouse on a bull from the eastern part of the island; the six previously infested premises were on the western end. Inspections of livestock on the farm of origin of the bull and on other farms in that area did not disclose any additional *A. variegatum* ticks.

Systematic dipping was discontinued on each farm 2 years following the most recent collection of *A. variegatum* on the farm, and thus all systematic dipping was discontinued in May 1970. In May 1972, a complete inspection of livestock on St. Croix was made and no *A. variegatum* ticks were found.

On March 17, 1971, a Consumer and Marketing Service (C&MS) meat inspector collected a male *A. variegatum* tick from a sheep at the local abattoir. A complete inspection at the farm of origin disclosed additional *A. variegatum* on sheep and cattle. This premises is under insular quarantine and systematic dipping was instituted.

Table 4.—Livestock were inspected and dipped on St. Croix during fiscal years 1969-1972

	1969		1970		1971		1972	
	Inspected	Dipped	Inspected	Dipped	Inspected	Dipped	Inspected	Dipped
Cattle	36,674	36,701	20,877	23,482	3,195	417	12,702	12,585
Sheep	9,667	9,667	3,984	3,810	1,111	829	8,095	8,040
Goats	9,219	9,219	4,563	1,683	100	0	2,978	2,814
Horses	1,996	2,014	1,270	1,158	62	30	830	823
Donkeys	0	3	2	0	0	0	0	0
Mules	-	2	0	0	0	0	0	0
Swine	9,669	9,669	874	0	0	0	0	0
Dogs	972	972	263	133	1	0	0	0
Cats	2	0	0	0	0	0	0	0
Rabbits	16	0	0	0	0	0	0	0
Chickens	233	0	0	0	0	0	0	0
Mongoose	0	0	11	0	0	0	0	0
Deer	0	0	31	0	13	0	28	0
Total	68,448	68,247	31,875	30,266	4,481	1,276	24,633	24,262

Tick Eradication Training School

A tick eradication training school was held at Laredo, Tex., April 24-28, 1972. There were nine participants from the Veterinary Services station in Austin, Tex., and nine from the Texas Animal Health Commission. This brings the total number of persons receiving such training to 256. The majority of these people were actively engaged in tick eradication activities along the Rio Grande River and in the South Texas areas.

The training sessions were conducted by Veterinary Services personnel to teach the livestock inspectors and veterinarians the fundamentals of the identification, biology, inspection, treatment, and eradication of cattle fever ticks (*Boophilus* spp.). Emphasis was also placed on the recognition and importance of domestic and exotic livestock ticks.

Permitted Dips

Effective July 5, 1972, Part 72, Title 9, Code of Federal Regulations, was amended to recognize toxaphene as a permitted dip.

Dips presently recognized for use in tick eradication programs are:

- (1) Toxaphene emulsions used at a 0.50 to 0.60 percent concentration
 - a. Cooper-Tox Livestock
 - b. Lintox-X (livestock spray and dip)
- (2) Arsenic solution used at a 0.18 to 0.22 percent concentration. Cattle Dip (labeled for official use only).
- (3) Coumaphos wettable powder used at a 0.125 to 0.25 percent concentration.
- (4) Dioxathion emulsion used at a 0.120 to 0.150 percent concentration.
 - a. Del-Tox (DLVGA emulsion only)
 - b. Delnav-Extra (EF-5 emulsion only)

Pesticides used improperly can be injurious to man, animals, and plants. Follow the directions and heed all precautions on the labels.

Store pesticides in original containers under lock—out of the reach of children and animals—and away from food and feed.

Apply pesticides so that they do not endanger humans, livestock, crops, beneficial insects, fish, and wildlife. Do not apply pesticides when there is danger of drift, when honey bees or other pollinating insects are visiting plants, or in ways that may contaminate water or leave illegal residues.

Do not clean spray equipment or dump excess spray material near ponds, streams, or wells. Because it is difficult to remove all traces of herbicides from equipment, do not use the same equipment for insecticides or fungicides that you use for herbicides.

Dispose of empty pesticide containers promptly. Have them buried at a sanitary land-fill dump, or crush and bury them in a level, isolated place.

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