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Equine **P**iroplasmosis



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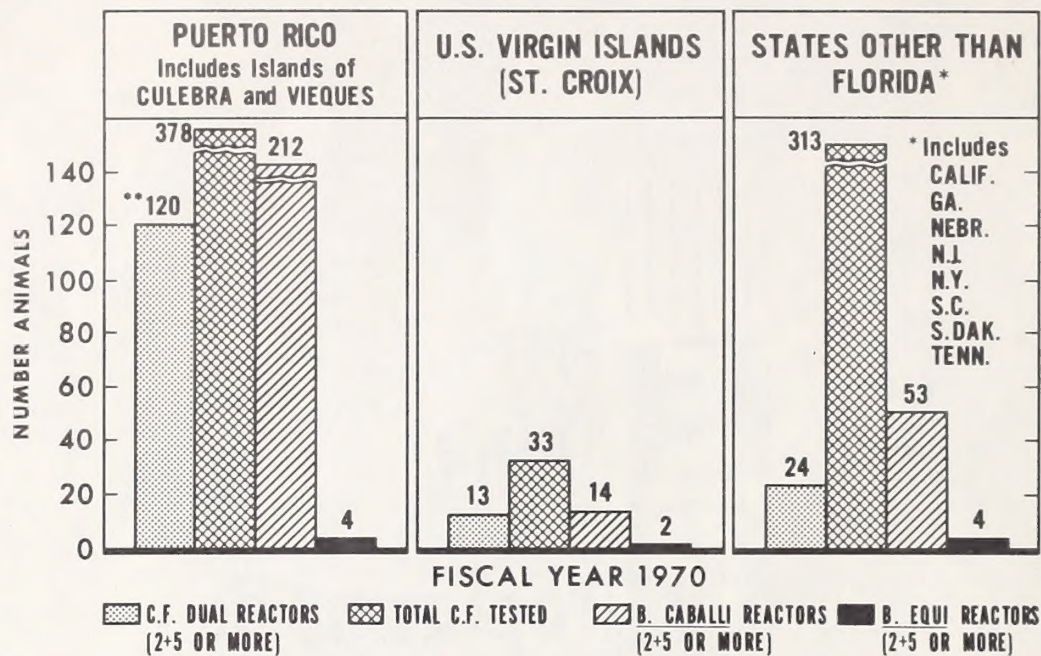
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PROCUREMENT SECTION
CURRENT SERIAL RECORDS

**Progress Report
Fiscal Year 1970**

AGRICULTURAL RESEARCH SERVICE
U. S. DEPARTMENT OF AGRICULTURE

EQUINE PIROPLASMOSIS SUMMARY



**80 Dual Reactors Were Disclosed on 3 Related Premises

U.S. DEPARTMENT OF AGRICULTURE

ANIMAL HEALTH DIVISION

AGRICULTURAL RESEARCH SERVICE

Fig. 1

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INTRODUCTION

The first confirmed case of equine piroplasmosis (EP) reported in the United States was found in Dade County, Fla., in August 1961. Since that time, EP has been reported from Puerto Rico, the U.S. Virgin Islands (St. Croix), in several counties in southern Florida, and through the tracing of movements of horses to Arkansas, California, Georgia, Mississippi, Nebraska, New Jersey, New York, North Carolina, South Carolina, South Dakota, Tennessee, and Virginia. Fiscal year 1970 reports are reflected in figure 1.

When EP appeared in 1961, the State of Florida and the Agricultural Research Service of the U.S. Department of Agriculture entered into a cooperative effort to control the spread of EP and to learn more about this malady believed new to the continental United States. Activities referred to in this report were carried out in cooperation with the following: Florida Department of Agriculture, Florida Racing Commission, University of Florida, Puerto Rico Department of Agriculture and Commerce, the U.S. Department of Defense (Veterinary Corps - Fort Buchanan, Puerto Rico), U.S. Virgin Islands Department of Agriculture and Recreation, and private veterinary practitioners.

All references to EP in this report relate to the syndrome caused by Babesia caballi except where noted as the type caused by Babesia equi .

EQUINE PIROPLASMOSIS IN FLORIDA

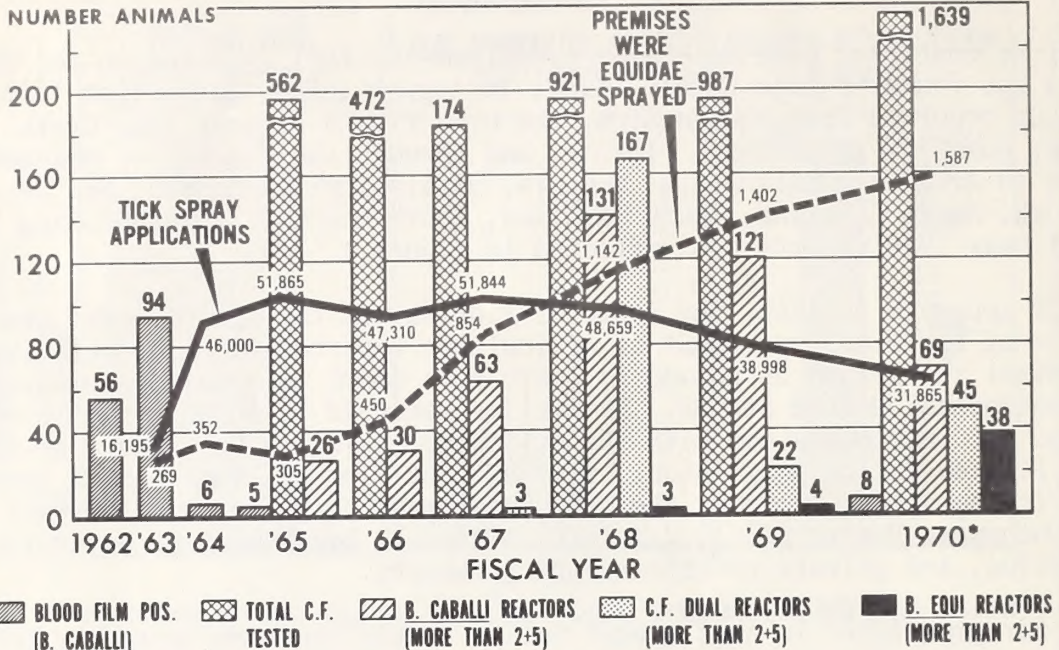
During fiscal year 1962-64 and the first part of fiscal year 1965, a blood film examination was used in Florida to aid in the diagnosis of EP. Field activities were usually limited to clinically suspicious animals or herds.

During the last part of fiscal year 1965 and fiscal years 1966-69, the complement-fixation (CF) test ^{1/} was used in most instances in lieu of the blood film examination. The CF test is a practical and accurate diagnostic tool.

During fiscal years 1967-70, CF tests applied to certain animals gave dual reactions (fig. 2); that is, serum from these animals reacted positively with both B. caballi and B. equi antigens. Two explanations given for these dual reactions are as follows: (1) Lack of specificity of the antigen; and (2) dual (both B. caballi and B. equi) infection in the animals. Dual infections in which an animal has been found to harbor both organisms has been conclusively demonstrated to exist in Florida and on St. Croix.

^{1/} For background information of demonstration of babesia on blood films, see "Diagnosis of Equine Piroplasmosis," In Equine Piroplasmosis (EP) Progress Report - Fiscal Year 1968, Anim. Health Div., Agr. Res. Serv., U.S. Dept. Agr. unnumbered pub. pp. 3. 1968

EQUINE PIROPLASMOSIS SUMMARY — FLORIDA



*In FY 1970, C.F. Reactors Included Readings of 2 + 5 or More

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Fig. 2

Control measures in certain counties in southern Florida consist of the following: (1) Application of tickicides to horses and other Equidae in herds known to be affected with EP, also herds adjacent to or having received animals from known EP-affected herds; (2) application of tickicides ^{2/} to animals in equine herds where owners voluntarily request tickicidal treatment, in certain instances at horse auction markets; (3) quarantines of known affected animals and of premises where tropical horse ticks (*Dermacentor nitens*) are found in combination with known affected animals; (4) tracing of movements of horses and other Equidae from known EP-affected herds; (5) inspecting traced animals for ticks, clinically examining all animals in these herds for signs of EP, and then applying the CF test to all animals in these herds; (6) chemotherapy directed at rendering horses and other Equidae previously classified as affected as being incapable of transmitting the disease.

^{2/} For more details see section in this report "Summarization of Ticks on Equidae in Florida."

Summary of Known EP-Affected Animals in Florida
According to Geographical Locations - Fiscal Year 1970

County	Tatto identification	Equidae Number	Premises Number
Brevard.....	9P135	1	1
Broward.....	9P94 through 9P99, 9P106, 9P107, 9P111, 9P113 through 9P116, 9P119, 9P124, 9P134, 9P136, 9P137, OP3, OP6, OP8, through OP24, OP26 through OP55, OP57 through OP61, OP65 through OP71	79	28
Citrus.....	9P102	1	1
Collier.....	OP7	1	1
Dade.....	9P100, 9P101, 9P105, 9P108, 9P120, 9P121, 9P126 through 9P133, OP1, OP5, OP56, OP62 through OP64	20	12
Hendry.....	9P104, 9P109, 9P110	3	2
Hillsborough.....	9P117, 9P118, 9P122, 9P123	4	2
Leon.....	OP72 through OP113	42	1
Palm Beach.....	9P103, 9P112, 9P125, 9P138, through 9P140, OP2, OP4, OP25	9	7
Total		160	55

Methods of Confirming Diagnosis 1/

Tattoo identification	County	Blood film stain and result of examination 2/	Complement-fixation test results
9P106.....	Broward	AO positive	<u>B. caballi</u> positive
9P115.....	Broward	AO positive*	<u>B. caballi</u> negative <u>B. equi</u> negative
9P135.....	Brevard	AO positive*	<u>B. caballi</u> negative <u>B. equi</u> negative
OP7.....	Collier	AO positive*	<u>B. caballi</u> negative <u>B. equi</u> negative
OP24.....	Broward	AO positive*	<u>B. caballi</u> negative <u>B. equi</u> negative
OP56.....	Dade	Giemsa positive	Not performed
OP61.....	Broward	AO positive	Do.
OP62.....	Dade	Giemsa positive	Do.

1/ All other cases reported in fiscal year 1970 were by positive complement-fixation test reaction.

2/ AO - acridine orange staining technique was used.

*Material believed to be Babesia parasites was demonstrated.

We believe that the nuclear material in equine blood can be confused with Babesia bodies when the acridine orange (AO) staining technique is used. This could account for the disparity between the results reported from blood film examination and the complement-fixation results.

Known Affected Animals Reported by Breed

Among the 160 Equidae classified as EP reactors, the following breeds were represented:

Mixed Breed	-	57	Asses	-	5
Quarter Horse	-	8	Paint	-	1
Shetland	-	2	Palomino	-	5
Thoroughbred	-	4	Paso Fino	-	56
Appalossa	-	5	Standardbred	-	1
Pony	-	6	Trochadora	-	1
American Saddle	-	4			

Known Affected Animals Reported by Gender

Among the 160 Equidae identified as EP reactors in fiscal year 1970, the gender is as follows:

Geldings	-	57	Female Asses	-	3
Mares	-	84	Male Asses	-	2
Stallions	-	10			

Length of Time on Premises Before Disclosure of EP

Among the 160 Equidae classes as reactors for EP, the following were located on the premises where they were found as reactors for--

60 days or less	-	29	1 to 2 years	-	22
61 days to 120 days	-	7	Over 2 years	-	60
121 days to 365 days	-	37	Unknown	-	5

EQUINE PIROPLASMOSIS IN PUERTO RICO

In August 1964 the first case of EP reported in Puerto Rico was found in a mare at the riding stable at Fort Buchanan. The diagnosis was confirmed by blood film examination.

During fiscal year 1970, among 378 horses CF-tested in Puerto Rico, Culebra, and Vieques (fig. 1), 212 reacted positively for B. caballi; 120, for both B. caballi and B. equi (dual reactors); and 4, for B. equi. Thus, among 378 horses tested, 336 (88.8 percent) reacted positively with one or both types of Babesia antigen.

Animals tested on these three islands generally fell into three categories: Private-owned pleasure horses kept at military bases; Paso Fino horses (fine pacing horses native to Puerto Rico); and a few Thoroughbreds. The privately owned and Paso Fino horses have been shown to be commonly infested with Dermacentor nitens ticks.

SUMMARIZATION OF TICKS ON EQUIDAE IN FLORIDA

General Tickicidal Treatments

Equine piroplasmosis is generally recognized to be a tick-borne disease. Horses in southern Florida have been found to be infested with several ticks; namely, the tropical horse tick, Dermacentor nitens; the Gulf Coast tick, Amblyomma maculatum; the black-legged tick, Ixodes scapularis; and, to a lesser degree, the lone star tick, Amblyomma americanum; and the American dog tick, Dermacentor variabilis.

The attack against EP is directed against D. nitens infesting Equidae in Florida. Notably, the great predominance of the infesting ticks were tropical horse ticks and they exhibit a predilcetion for the ears and false nostrils. In all confirmed cases of EP (B. caballi), D. nitens are present.

Treatments were (1) application every 21 days of 0.50 percent toxaphene over the whole animal, and (2) application of 1 percent lindane in cottonseed oil to the ears and false nostrils. Since May 1, 1970, dioxathion (Delnav) has replaced toxaphene as the tickicide of choice used at a concentration of 0.150 as a whole body spray and 1 percent in cottonseed oil applied to the ears and false nostrils. Many horse premises in southern Florida consist of 2- to 5-acre pastures, some of which contain only one or two animals. This dispersion of horses, and as many of these animals are considered pets, made dipping against ticks impractical. Thus, high-pressure spraying was chosen as the method of treatment.

During fiscal year 1970 collections of tropical horse ticks (D. nitens) in Florida were 137 collections from horses and other Equidae; no D. nitens were collected from other hosts.

The numbers of horse premises and tick-spray applications during fiscal years 1963-70 were as follows:

Fiscal year	Premises Number	Tick-spray applications Number
1963.....	1/ 269	16,195
1964.....	352	46,000
1965.....	305	51,865
1966.....	450	47,310
1967.....	854	51,844
1968.....	1,142	48,659
1969.....	1,402	38,998
1970.....	1,587	31,865

1/ Spraying was initiated in October 1962; therefore, a full year is not represented.

Ticks Collected in Florida During Fiscal Year 1970

Six maps (figs. 3-8) show counties in Florida where various ticks were collected, principally from horses and cattle; however, ticks were also collected from dogs, feral animals, and occasionally from other sources such as clothing. Figure 8 shows total ticks collected in various counties in Florida.

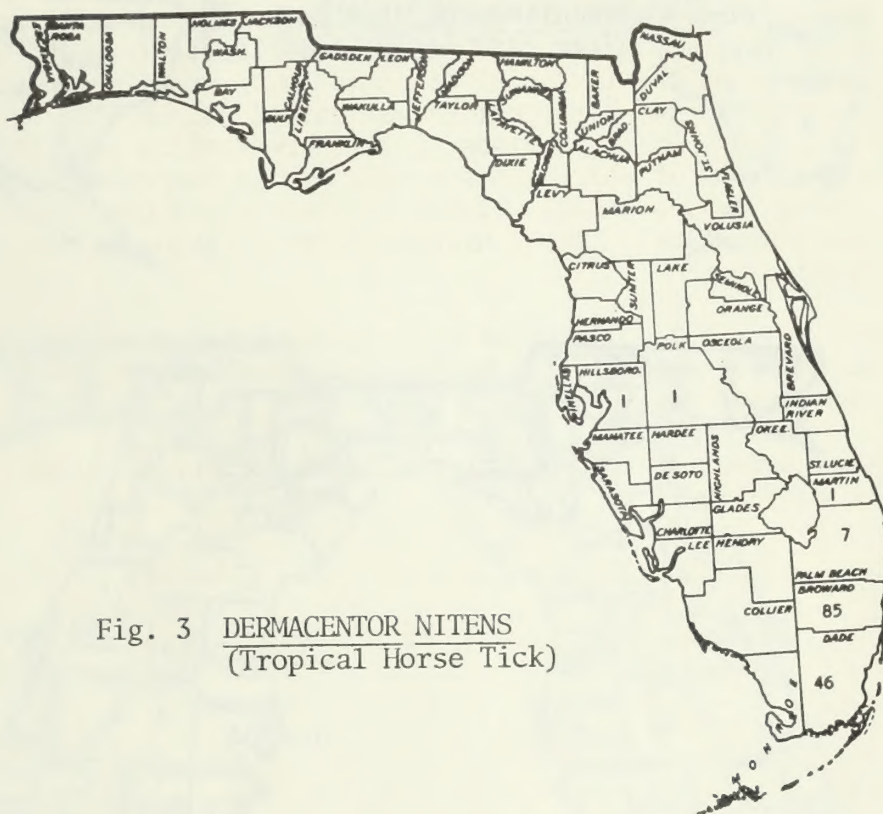


Fig. 3 DERMACENTOR NITENS
(Tropical Horse Tick)

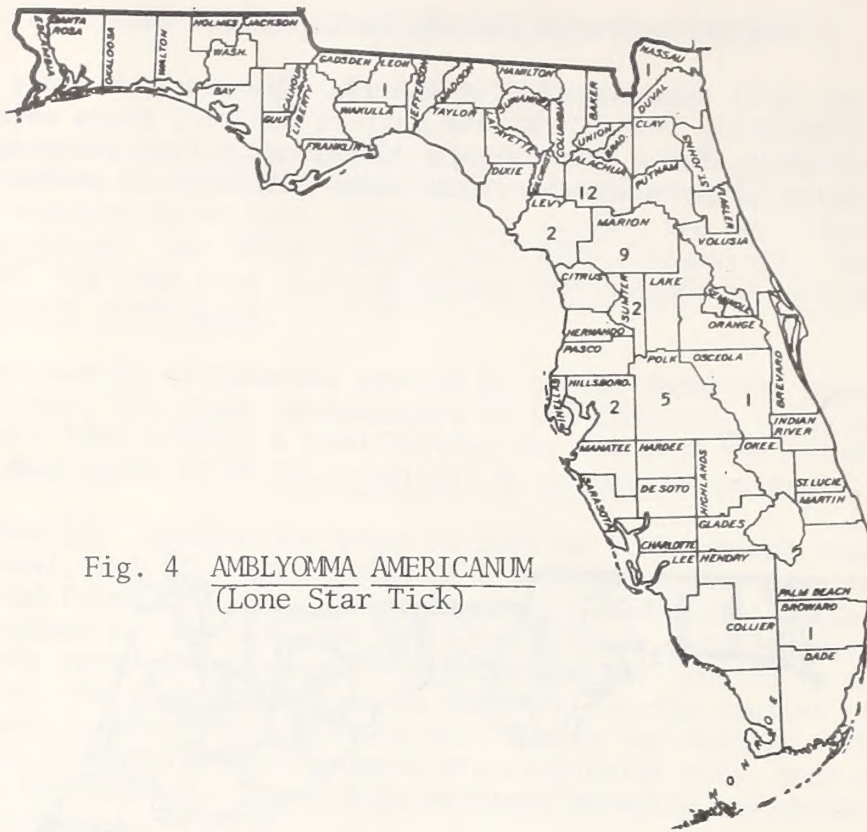


Fig. 4 AMBLYOMMA AMERICANUM
(Lone Star Tick)

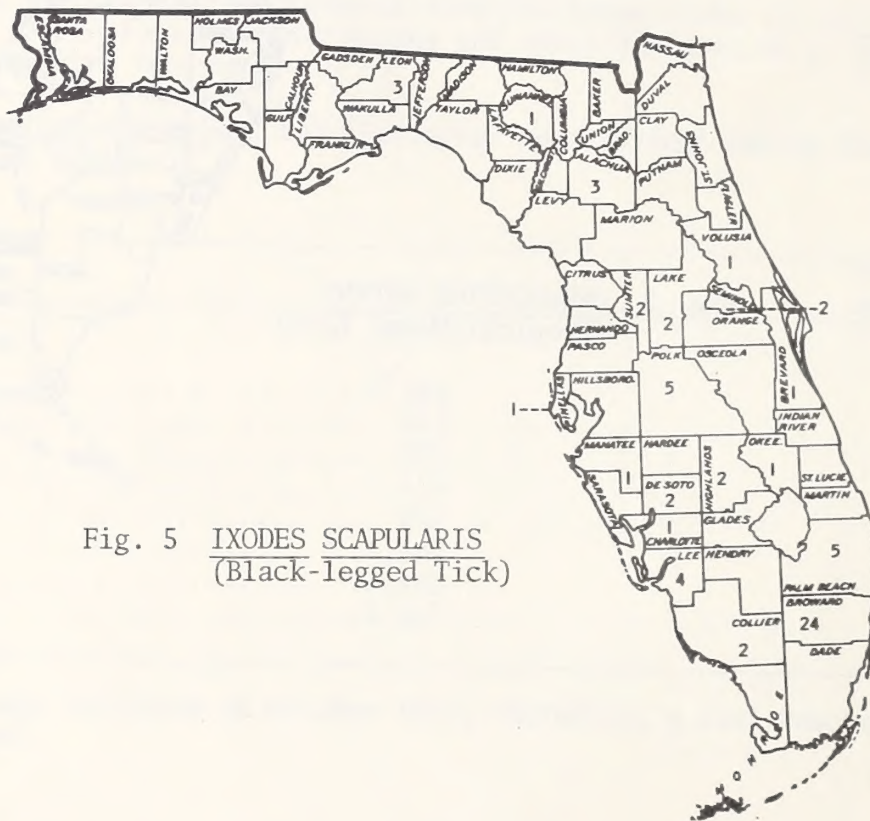


Fig. 5 IXODES SCAPULARIS
(Black-legged Tick)

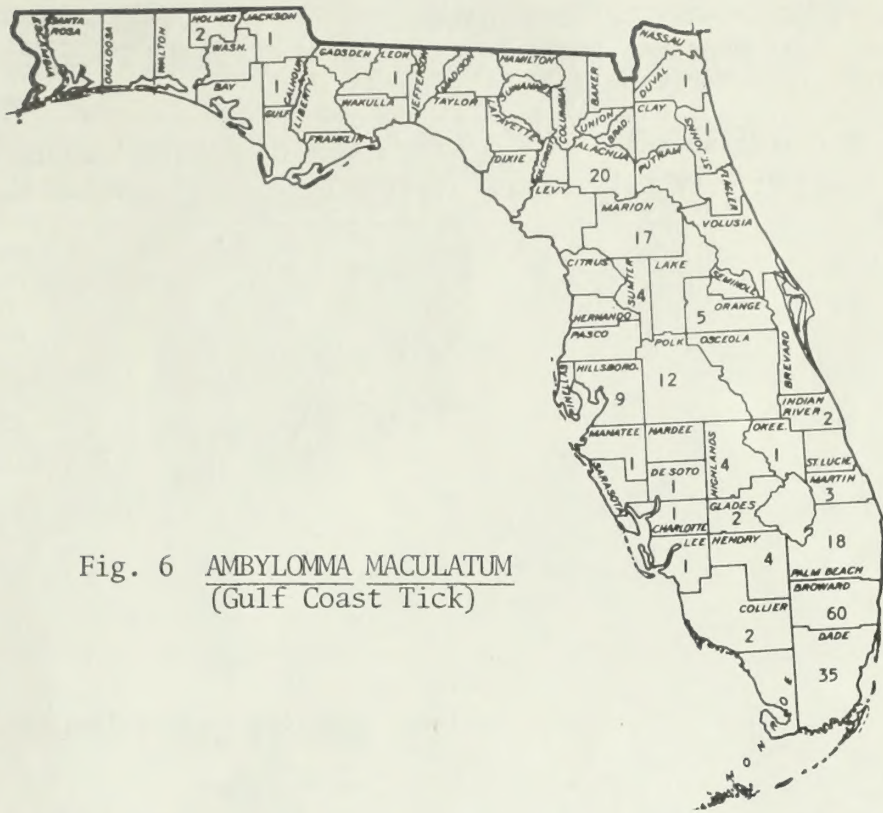


Fig. 6 AMBYLONMA MACULATUM
(Gulf Coast Tick)

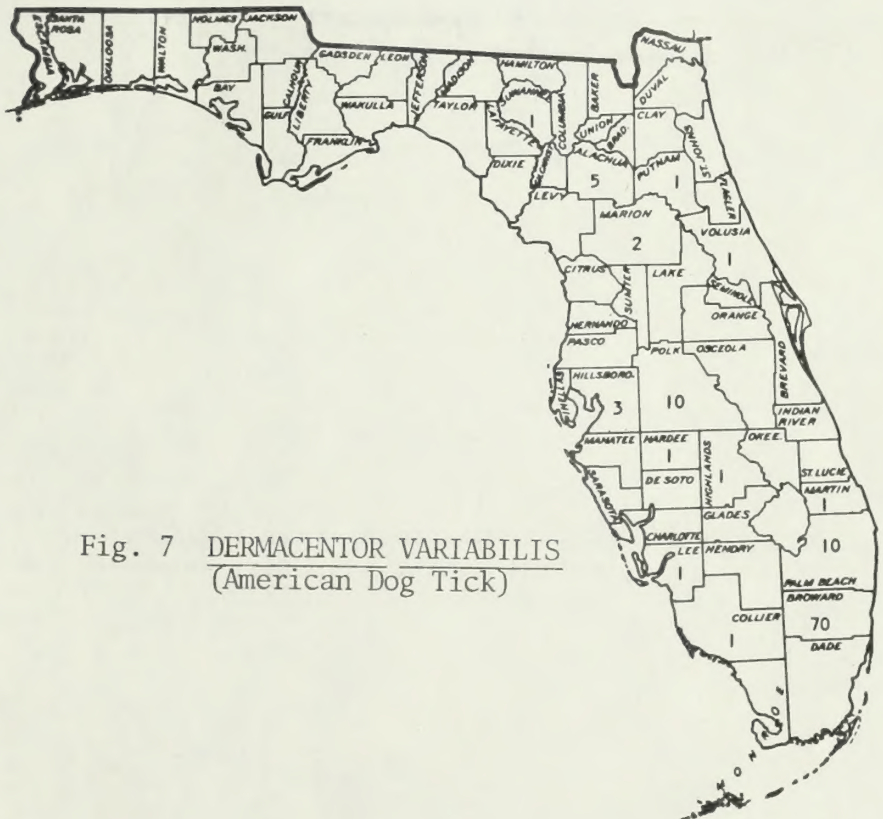


Fig. 7 DERMACENTOR VARIABILIS
(American Dog Tick)

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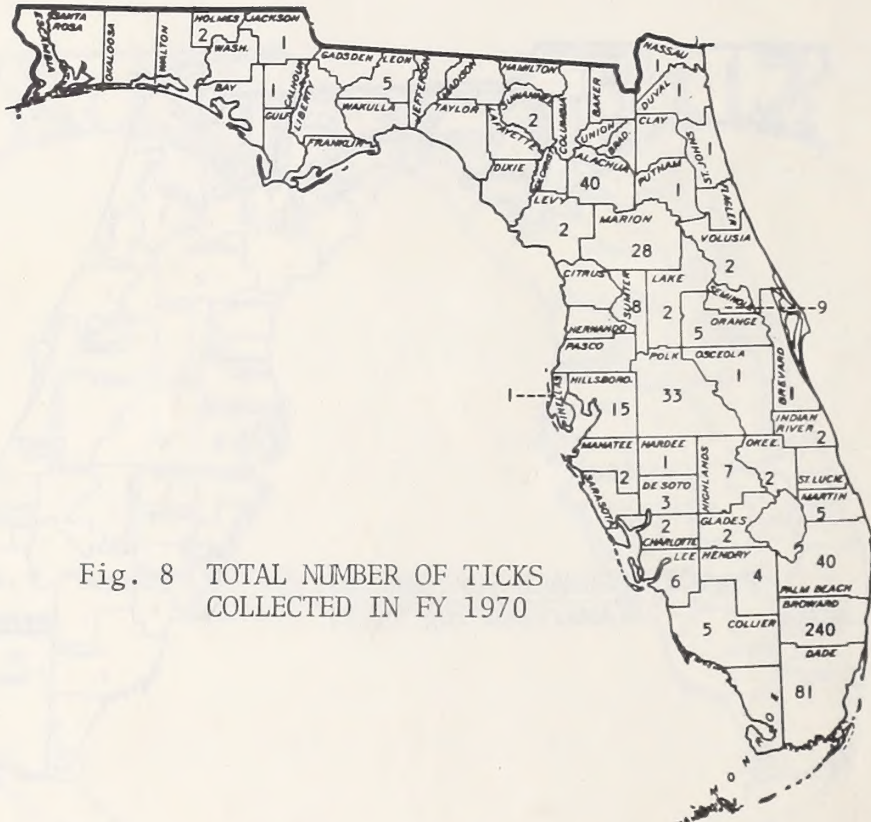


Fig. 8 TOTAL NUMBER OF TICKS COLLECTED IN FY 1970