

NEW RECORDS OF CHIGGERS (ACARINA:
TROMBICULIDAE) FROM FLORIDA^{1,2}A. L. DOHANY³, AND H. L. CROMROYDepartment of Entomology and Nematology,
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ABSTRACT

Chiggers (trombiculid larvae) were collected and identified from the north, northcentral, and central parts of Florida. Six species are reported as new to the State and 2 are reported from new hosts.

Chiggers or trombiculid larvae cause trombidiosis in humans in much of the United States. The effects of chigger attack on humans is normally characterized by itching and swelling at the site of chigger attachment. Trombidiosis may also be accompanied by secondary infection and persistent lesions. The primary hosts of chiggers are a variety of birds, mammals and reptiles. Severe damage to turkeys may be caused by chigger attack (Everett et al. 1973), and recent reports indicate that chiggers are the cause of lesions on horses in the Pacific Northwest (Easton and Krantz 1973).

Only a few extensive, area-wide studies of chiggers have been conducted in the United States (Loomis 1956, Gould 1956, Jenkins 1948, Crossley and Proctor 1971). Surprisingly little work has been conducted on the chiggers found in Florida. As a preliminary to systemic acaricide studies for the control of chiggers (Dohany 1974), a limited study of the distribution of the chiggers within the general study area was conducted.

METHODS

Chiggers were collected primarily from litter samples and tree holes, and were obtained by using the Tullgren modification of the Berlese funnel. Some specimens were also collected from black plates. Samples were taken from Tallahassee (Tall Timbers Research Station) in the northern part of the state, from Gainesville in the northcentral part of the state, and a small collection was made from Lakeland in the central part of the state (Fig. 1).

Chiggers were collected in 80% ethyl alcohol and were mounted directly into Hoyer's media on microscope slides (Krantz 1970). Cover slips were applied and the slides were heated over an alcohol burner until bubbles began to form. After drying, the cover slips were ringed with Glyptal and the cleared chiggers were identified to species. Measurements were made with an ocular micrometer.

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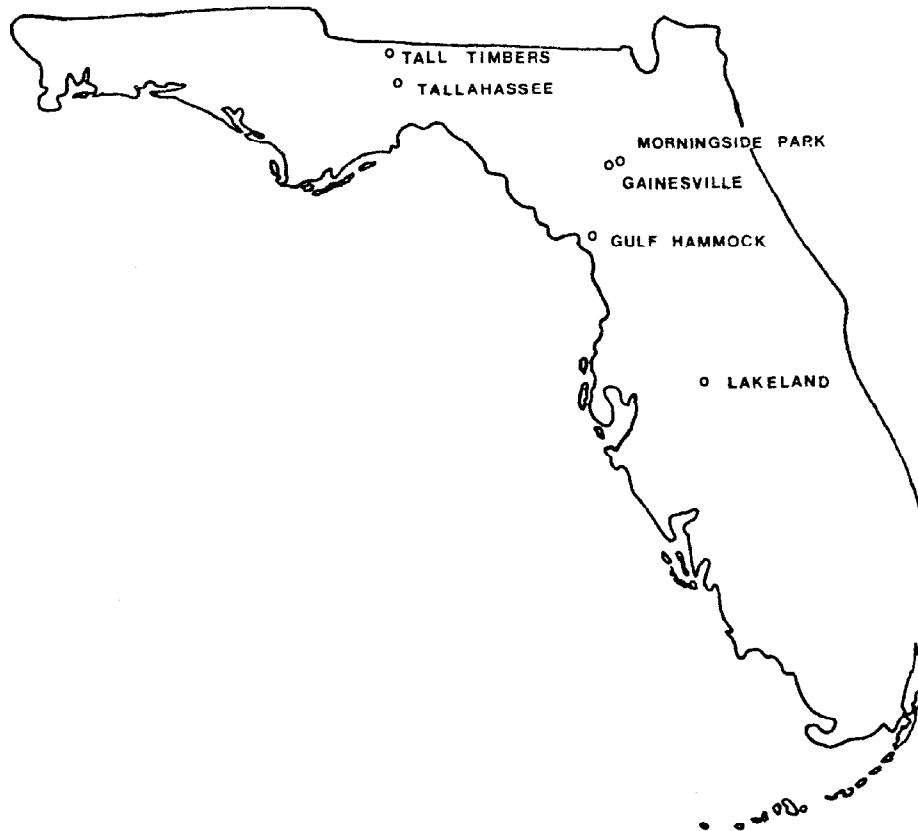


Fig. 1. Map of the state of Florida showing chigger collection sites.

RESULTS

Eutrombicula

The most common chiggers that attack humans in the United States are in the genus *Eutrombicula*. The 2 most frequently occurring in the southeastern United States are *E. splendens* (Ewing) and *E. alfreddugesi* (Oudemans). Jenkins (1948a) presented the host and habitat information on these 2 species in detail. Numerous specimens of both species were collected from all locations, primarily by the black plate collection technique and from live-trapped rodents.

Jenkins (1948), Wharton and Fuller (1952), and Wolfenbarger (1952) presented an abundant number of hosts from which each of these species has been collected. The scutal measurements of *E. alfreddugesi* and *E. splendens* are presented in Table 1.

Fonsecia

Two species of the genus *Fonsecia* were collected: one of the subgenus *Fonsecia* and the other of the subgenus *Parasecia*. The genus *Fonsecia* is characterized by having the PL's greater than the AM and the AM greater than the AL's. The subgenus *Parasecia* differs from the subgenus *Fonsecia*

TABLE 1. SCUTAL MEASUREMENTS OF *Eutrombicula alfreddugesi* (OUDEMANS) AND *E. splendens* (EWING), AND A COMPARISON OF MEASUREMENTS MADE BY PREVIOUS CHIGGER TAXONOMISTS. ALL MEASUREMENTS ARE IN MICRONS.

	AW	PW	SB	ASB	PSB	A-P	AM	AL	PL	S
<i>Eutrombicula alfreddugesi</i>										
Florida										
A	72	87	40	22	31	27	31	29	42	45
B	77	90	42	22	25	25	37	32	47	51
C	87	94	45	24	30	25	30	36	49	47
D	78	93	45	24	30	27	36	33	46	---
E	80	92	47	25	27	26	27	30	44	49
F	81	93	46	24	31	26	30	31	47	44
G	88	94	44	25	30	27	40	32	49	53
Average	81	92	44	24	29	26	33	32	46	48
Jenkins (1949)	81	90	43	23	31	27	33	33	47	50
Wolfenbarger (1952)										
Kansas										
	77	88	43	23	26	27	28	29	40	49
<i>Eutrombicula splendens</i>										
Florida										
A	80	92	43	23	28	25	---	34	50	---
B	82	95	43	26	28	26	38	33	48	---
C	84	95	45	27	30	28	41	38	50	---
D	85	95	47	26	32	28	40	35	50	---
E	80	92	43	25	30	29	40	36	52	---
F	87	100	49	24	30	29	---	---	48	---
G	78	91	44	22	32	27	37	23	48	51
Average	82	94	45	25	30	27	39	35	49	51
Jenkins (1949)	78	91	44	22	32	27	37	34	48	51
Wolfenbarger (1952)										
Missouri										
	83	94	43	24	28	27	33	34	47	52
Arkansas										
	92	104	47	25	31	30	35	33	47	53
Texas										
	100	112	50	25	31	29	36	33	47	52

by having normal AL scutal setae, while they are peg-like in the subgenus *Fonsecia*. Radford (1942) originally proposed the raising of 2 Brazilian species to the generic level and designating them *Fonsecia* as the "anterolateral setae were represented by tooth-like projections." Brennan and Loomis (1959) in their review of the genus, placed 7 species in *Fonsecia*. Loomis (1956) established the subgenus *Parasecia* with *F. (Parasecia) gurneyi* (Ewing) being the type species and referred 6 additional species to the subgenus.

Brennan (1969), in adding 3 new species to the subgenus *Parasecia*, stated that; "*Parasecia* is further distinguished from *Fonsecia*, whose four species

are also restricted to the New World, by a sinuous posterior scutal margin (convex in *Fonsecia*) and a wide host range (*Fonsecia* species apparently confined to reptiles)".

Fonsecia (Fonsecia) palmella Brennan and Loomis was collected from Berlese samples of 5 treeholes and a sample of Spanish moss (*Tillandisia usneoides*) from the Tallahassee area. This species had been previously collected from the southeastern five-lined skink (*Eumeces inexpectatus*) and from the five-lined skink (*E. fasciatus*) from Louisiana (Loomis 1956). This is the only species of *Fonsecia (Fonsecia)* that has been reported from the United States. The scutal measurements of specimens of *F. (F.) palmella* are presented in Table 2.

TABLE 2. SCUTAL MEASUREMENTS OF *Fonsecia (Fonsecia) palmella* BRENNAN AND JONES. ALL MEASUREMENTS ARE IN MICRONS.

Slide	AW	PW	SB	ASB	PSB	A-P	AM	AL	PL	S
A	56	70	26	25	18	15	43	12	37	69
B	55	69	26	27	17	13	41	12	38	64
C	54	70	26	27	16	13	46	12	40	63
D	56	69	26	25	17	12	41	11	35	61
E	55	71	27	28	17	12	42	11	39	62
Average	55	70	26	27	17	13	43	12	38	64
B. & L.*	57	71	27	30	17	14	42	12	37	63

*Brennan and Loomis (1959).

Fonsecia (Parasecia) gurneyi gurneyi (Ewing) was the most abundant chigger collected from Berlese samples of treeholes. This species was collected from all the collection sites in Gainesville, Tallahassee, and Lakeland. This species has been reported throughout the southeastern United States, as far north as Maryland and as far west as Texas. Loomis (1956) listed a large number of reptiles and mammals that *F. (P.) gurneyi gurneyi* was collected from and determined that its principal host in eastern Kansas seemed to be the five-lined skink (*E. fasciatus*). The scutal measurements of 10 specimens of *F. (P.) gurneyi gurneyi* are presented in Table 3.

Euschongastia

Two species of *Euschongastia* were collected during this study. Farrell (1956) conducted a detailed study of the *Euschongastia* of North America.

Euschongastia peromysci (Ewing) was taken from *Peromyscus floridanus* from the Gainesville area. This species has been previously reported throughout the northeastern United States as far west as Oklahoma. Crossley and Proctor (1971) reported this species from the eastern chipmunk (*Tamias striatus*) and the pine vole (*Microtus pinetorum*) from Georgia. This is the first record of this species from Florida.

Euschongastia peromysci can be easily distinguished by its unusual galeal setae, having 1-3 stiff setules that arise near the base, and by its characteristic scutal shape. The scutal measurements of 5 specimens are presented in Table 4.

TABLE 3. SCUTAL MEASUREMENTS OF *Fonsecia (Parasecia) gurneyi* (EWING). ALL MEASUREMENTS ARE IN MICRONS.

Slide	AW	PW	SB	ASB	PSB	A-P	AM	AL	PL	S
A	65	76	29	25	15	17	31	26	45	61
B	64	75	32	24	16	18	30	24	42	---
C	64	74	32	24	17	16	26	24	40	54
D	67	79	32	25	17	17	27	26	41	54
E	66	76	31	21	17	16	31	25	44	54
F	62	74	32	23	16	17	30	24	40	---
G	64	76	30	31	18	17	31	24	40	55
H	65	78	29	22	17	18	31	24	41	56
I	66	76	31	24	16	18	32	25	43	53
J	65	76	31	24	16	18	30	27	45	59
Average	65	76	31	23	16	17	30	25	42	56
Loomis (55)	61	72	28	22	16	15	28	23	41	48

TABLE 4. SCUTAL MEASUREMENTS OF *Euschongastia peromysci* (EWING). ALL MEASUREMENTS ARE IN MICRONS.

Slide	AW	PW	SB	ASB	PSB	A-P	AM	AL	PL	S
A	50	59	15	31	13	18	36	53	55	24 × 15
B	48	57	14	39	14	17	37	54	53	21 × 15
C	51	58	14	30	13	17	34	55	57	23 × 15
D	49	58	14	29	15	15	34	50	53	--- × 16
E	50	57	---	30	11	16	34	56	59	25 × 15
Average	50	58	14	30	14	17	35	54	55	23 × 15
Farrell*	50	57	22	27	8	13	27	35	46	27 × ---

*Farrell (1956). Average of 100 specimens.

A single specimen of *Euschongastia setosa* (Ewing) was collected from a treehole in Gainesville in December 1971. Additional specimens were not found, even though extensive samples were made from this same treehole throughout the year. This collection in the winter corresponds with previous collections of this species. Farrell (1956) recorded this species occurring from late fall through spring in North Carolina and Pennsylvania. The specimen of *E. setosa* (a co-type) that was previously collected from the closest locality to Gainesville, Okefenokee Swamp, Georgia, was also collected during December (Ewing 1937).

Euschongastia setosa is characterized by its scutum being wider than the PL and the sensillae heads being ovoid. The scutal measurements (in μm) for the 1 specimen collected are:

AW	PW	SB	ASB	PSB	A-P	AM	AL	PL	S
66	86	28	22	8	19	36	30	63	30 × 15

Microtrombicula

Microtrombicula crossleyi (Loomis) was collected only from a tree-hole from the Tallahassee area. This species has previously been reported from Kansas and Oklahoma (Loomis 1954).

Microtrombicula crossleyi is closely related taxonomically to *M. trisetica* (Loomis and Crossley), both having 3 pairs of sternal setae and multiple coxal setae. The chief characteristics separating the 2 species are the reduced scutum of *M. trisetica* with 3 setae on coxa III while *M. crossleyi* has 5 setae on coxa III. The scutal measurements of *M. crossleyi* are listed in Table 5.

TABLE 5. SCUTAL MEASUREMENTS OF *Microtrombicula crossleyi* (LOOMIS). MEASUREMENTS ARE IN MICRONS.

Slide	AW	PW	SB	ASB	PSB	A-P	AM	AL	PL	S
A	34	42	13	22	23	20	19	13	25	32
B	36	42	13	20	21	21	16	16	24	29
C	33	41	11	21	19	19	14	18	22	25
D	32	41	13	21	19	21	18	17	22	28
E	32	37	12	20	21	22	17	16	24	30
Average	33	41	12	21	21	21	17	17	23	29
V-G*	35	46	12	22	20	22	21	18	57	34

*Vercammen-Grandjean (1956).

Walchia

Walchia americana Ewing was collected from a treehole in Gainesville. This species was originally described by Ewing (1942) from a "cotton mouse" (*Peromyscus gossypinus* [?]) from Tallahassee. It has been collected from numerous mammal hosts. Loomis (1956) indicated that this species, like all of the members of the subfamily Walchiinae, seems to occur only upon mammals. In addition to the type location, this species has been collected from Wisconsin (Farner 1946), Oklahoma, Nebraska, Iowa, Kansas, Utah (Loomis 1956), California (Gould 1956) and Georgia (Crossley and Proctor 1971).

The scutum of *W. americana*, as with the entire genus, has only 4 scutal setae: 2 AL's, 2 PL's, but lacks an AM. The scutal measurements are presented in Table 6.

Although relatively few samples were taken during this study, 6 species were found that were new to the State of Florida, and 2 are recorded from their hosts for the first time. Thus, it is apparent that little is known of the chigger distribution of the State of Florida. Florida, with its fairly diverse habitats and with their relative ease of access would offer a unique opportunity for distribution and taxonomic studies.

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TABLE 6. SCUTAL MEASUREMENTS OF *Walchia americana* EWING. ALL MEASUREMENTS ARE IN MICRONS.

Slide	AW	PW	SB	ASB	PSB	A-P	AM	AL	PL	S
A	47	70	41	20	48	29	---	25	27	50 × 10
B	45	70	40	19	47	29	---	28	28	50 × 10
Average	46	70	40	19	47	29	---	26	27	50 × 10
Loomis*	45	68	38	20	44	30	---	25	27	51 × ---

*Loomis (1956). Average of 7 specimens.

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INFESTATION OF NATIVE FLORIDA CATTLE WITH THE NORTHERN CATTLE GRUB, *HYPODERMA BOVIS* (DIPTERA: OESTRIDAE)¹—(Note). Larvae of the common cattle grub, *Hypoderma lineatum* (DeVillers), and the northern cattle grub, *Hypoderma bovis* (Linn.), are obligatory parasites that develop in bovine hosts. *H. lineatum* has a distribution throughout the United States, except Alaska, and is a long established pest of cattle in Florida. *H. bovis* is abundant in the United States north of Texas, but has not been able to survive in Texas (Price et al. 1969. Texas A & M Univ. Agric. Ext. Serv. B-1080. p. 17), and is only occasionally seen in cattle imported into Florida.

One larva of *H. bovis* was collected from a native cow in Orlando, Orange Co., Florida on 28 May 1969. Since that time no further records of the northern cattle grub on native Florida cattle had been made. On 14 November 1975, 1 third larval instar of *H. bovis* was taken from the back of a native yearling steer from Cocoa in Brevard County. Third instar *H. bovis* were again collected from native yearling steers in Cocoa on 20 and 23 December 1975 and 3 and 6 January 1976. Infestation rates at the times of collection ranged from 2 to 14 larvae per steer. Most of the larvae collected were mature and near pupation, and there was evidence that other larvae had previously emerged from the hides of the steers.

These infestations constitute a new state record, and the possibility of the establishment of this species in central Florida should be considered. Jayson I. Glick, Department of Entomology, University of Florida, Gainesville, 32611.

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