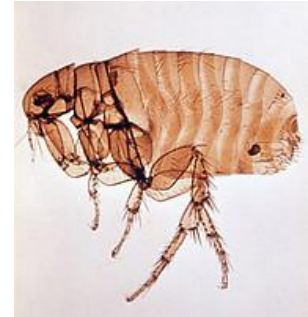


THE FLEA (SIPHONAPTERA) FAUNA OF GEORGIA, USA



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Introduction

- Some flea species can transmit zoonotic pathogens (e.g., *Rickettsia typhi*, *R. felis*, *R. prowazekii*, *Bartonella quintana*).
- Some are intermediate hosts of rodent & canine tapeworms (which can be zoonotic).
- Some are nuisance biters (e.g., *Ctenocephalides felis*, *Echidnophaga gallinacea*) – some can cause flea-bite dermatitis.
- Pathogen transmission or ecological importance for fleas parasitizing wild mammals or birds is poorly understood.
- Faunal studies have been completed for fleas of AL (Sanford & Hays 1974), FL (Layne 1971), SC (Durden et al. 1999) & TN (Pfitzer, 1950; Durden & Kollars 1997) but not for GA.



Previous records of GA fleas

- Data from surveys of rat fleas in association w. murine typhus studies (e.g., Fox 1931; Cole & Koepke 1947; Ludwig & Nicholson 1947; Morlan 1947, 1952; Harkema & Kartman 1948; Hill & Morlan 1948; Hill et al. 1951; Mohr 1951; Morlan & Hines 1951; Morlan & Utterback 1952; Mohr & Smith 1957; Love & Smith 1960).
- Data from a Catalog of Smithsonian (USNM) flea types (Adams & Lewis 1995).
- Data from flea specimens in the Natural History Museum, London (Hopkins & Rothschild 1953, 1962, 1966; Hopkins 1954; Smit 1987).
- Atlas of fleas of eastern N. America (Benton 1980).
- Data from numerous flea surveys of wild & domestic mammals (& a few birds) in GA.

Sources of new GA flea Records

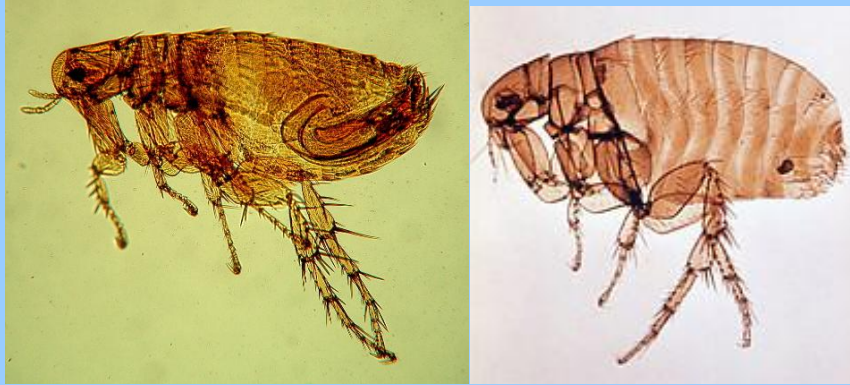
- Flea collections from southern GA from 100s of live-trapped or roadkill mammals & a few birds from 1992-2010 (Durden, unpublished).
- Collections from live-trapped mammals in N. GA mountains by Ralph Eckerlin from 1986-1992.
- Collections from live-trapped mammals (esp. carnivores & rabbits) throughout GA by W. Wilson Baker, 1964-1967.
- GSU Entomology Collection (inc. class student collections from 1961-2010).
- Cumberland Island Museum.
- Submitted specimens by students, researchers, veterinarians, physicians, etc.

RESULTS – *asterisks denote new state records

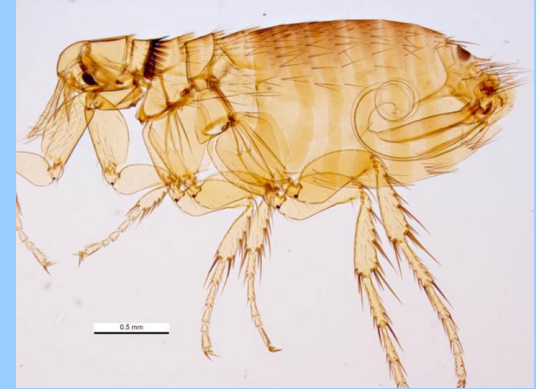
26 species of fleas were recorded in the following families:

- **Pulicidae:** 8 spp. (*Cediopsylla inaequalis**, *C. simplex*, *Ctenocephalides canis*, *Ct. felis*, *Echidnophaga gallinacea*, *Pulex irritans*, *P. simulans**, *Xenopsylla cheopis*).
- **Rhopalopsyllidae:** 1 sp. (*Polygenis gwyni*).
- **Ctenophthalmidae:** 7 spp. (*Conorhinopsylla stanfordi*, *Ctenophthalmus pseudagyrtes*, *Doratopsylla blarinae**, *Epitedia cavernicola**, *E. wenmanni*, *Nearctopsylla georgiana*, *Stenoponia americana*).
- **Ceratophyllidae:** 5 spp. (*Ceratophyllus celsus**, *Nosopsyllus fasciatus*, *Orchopeas howardi*, *O. leucopus*, *O. pennsylvanicus*).
- **Leptopsyllidae:** 4 spp. (*Leptopsylla segnis*, *Odontopsyllus multispinosus*, *Peromyscopsylla hesperomys**, *P. scotti*).
- **Ischnopsyllidae:** 1 sp. (*Sternopsylla distincta*).

SOME FLEAS OF PERIDOMESTIC RATS THAT WERE COMMON IN
GEORGIA AT LEAST UNTIL THE 1940s



Oriental rat flea,
Xenopsylla cheopis



Northern rat flea,
Nosopsyllus fasciatus

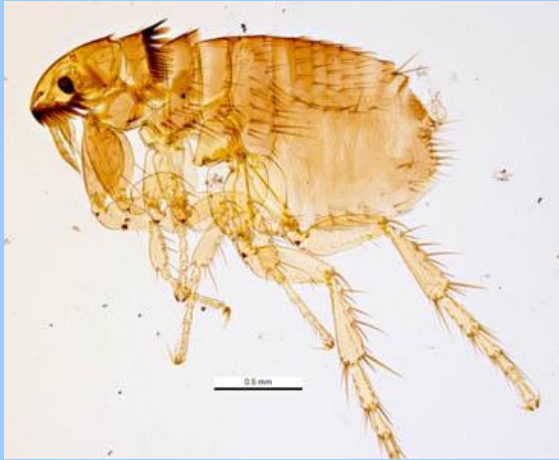


Sticktight flea,
Echidnophaga gallinacea



European mouse flea,
Leptopsylla segnis

CAT FLEA (COMMON IN GEORGIA) AND DOG FLEA



Cat flea, *Ctenocephalides felis*



Dog flea, *Ctenocephalides canis*

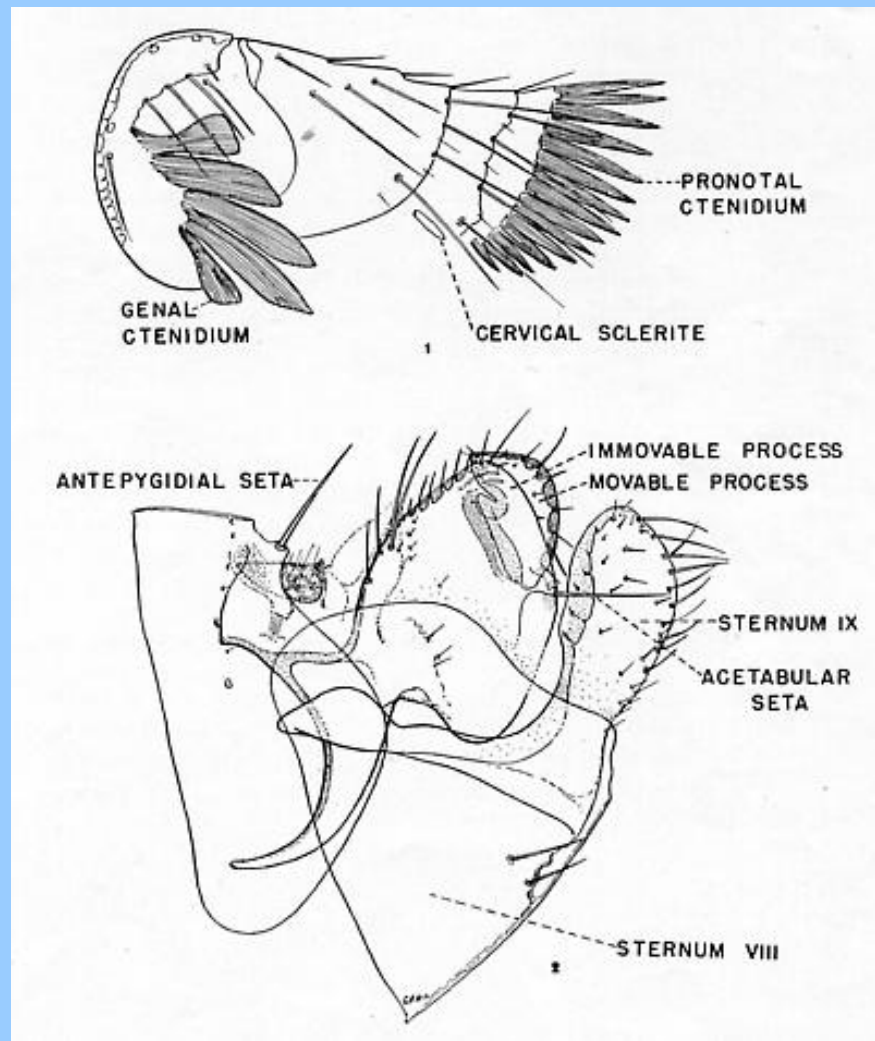


Pulex sp. – female

For this genus, females of *P. irritans* (“human flea”) & *P. simulans* cannot be distinguished morphologically



Squirrel flea, *Orchopeas howardi*

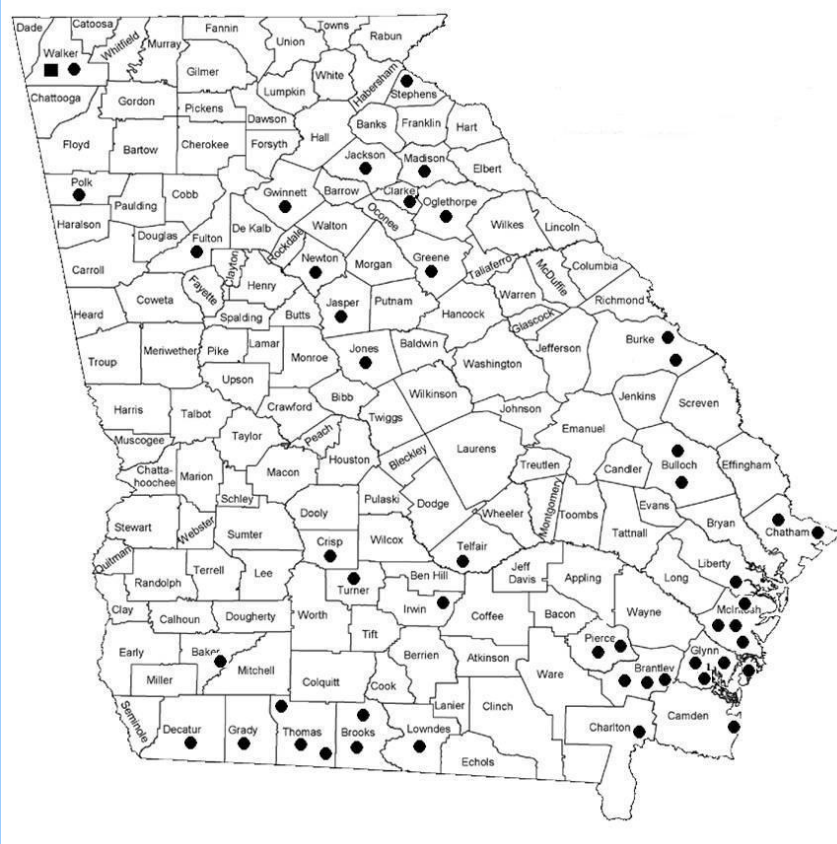


Nearctopsylla (Hollandia) georgiana Pratt & Harrison, 1954

Georgia's endemic flea species

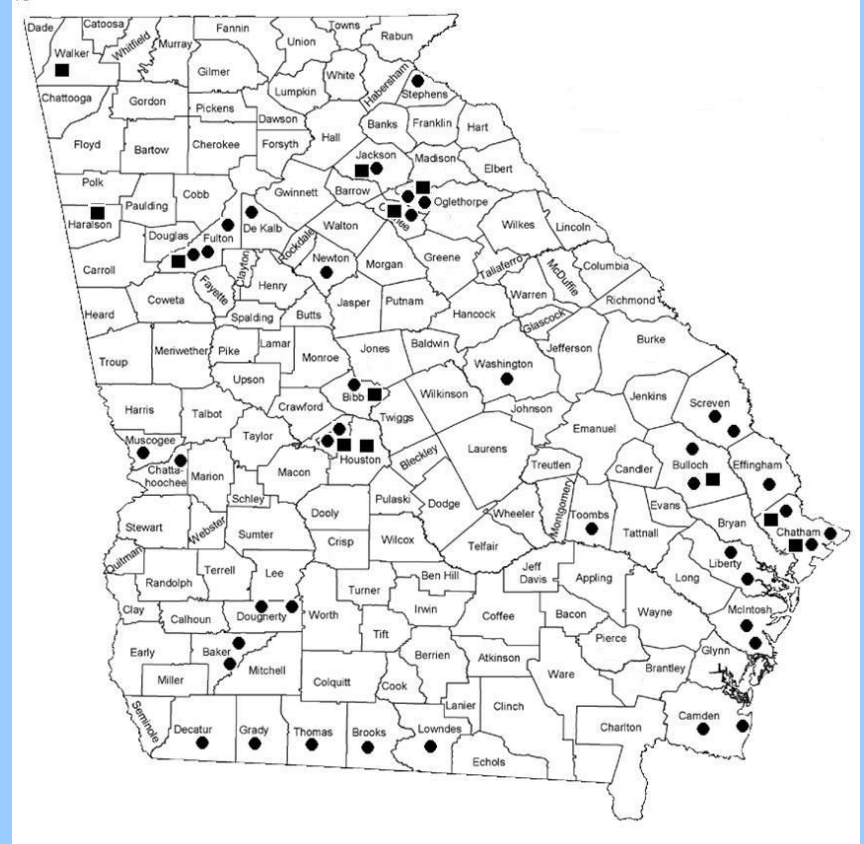
Only known from Brasstown Bald at 4,782 ft. from *Blarina brevicauda* (northern short-tailed shrew)

RECORDED DISTRIBUTIONS OF SOME GEORGIA FLEAS



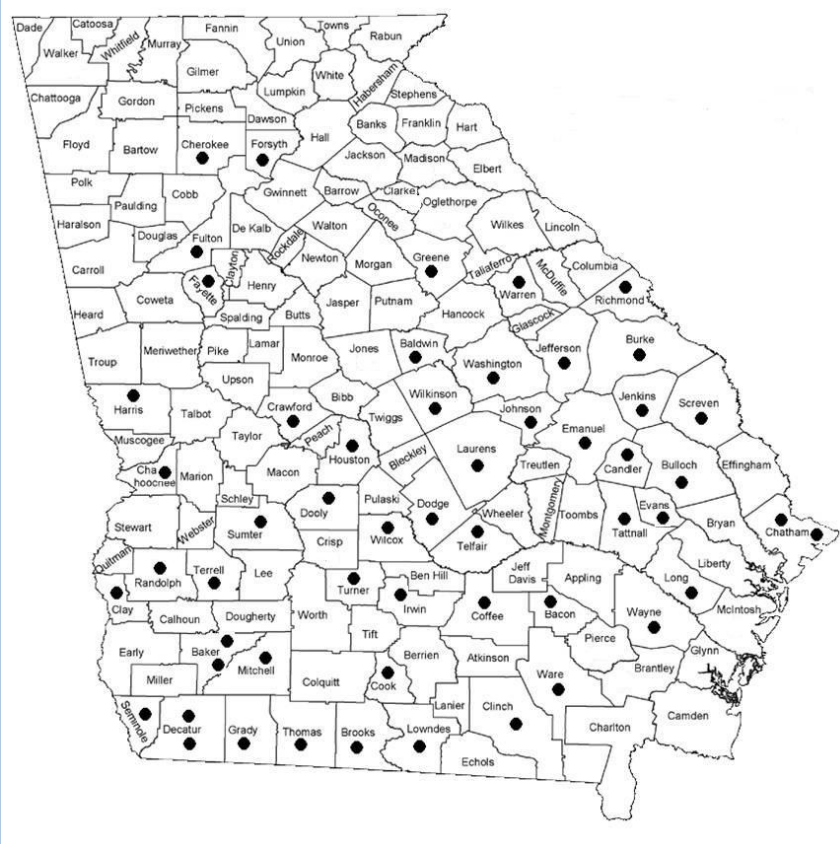
Cediopsylla simplex (circles)

Cediopsylla inaequalis (square)



Ctenocephalides felis (circles)

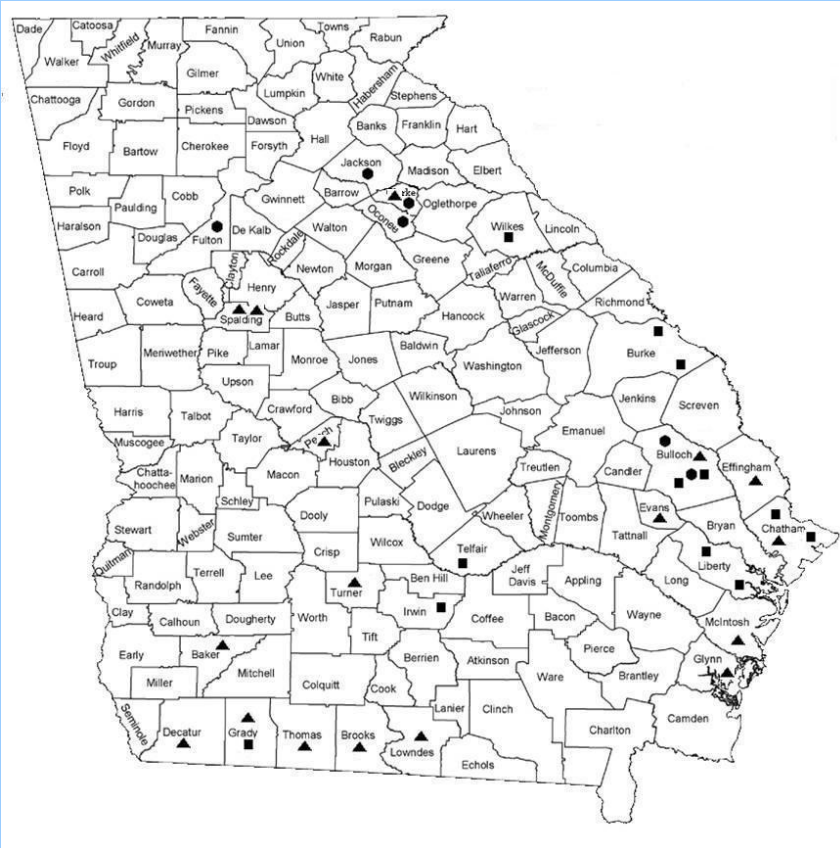
Ctenocephalides canis (squares)



Xenopsylla cheopis (pre-1958)



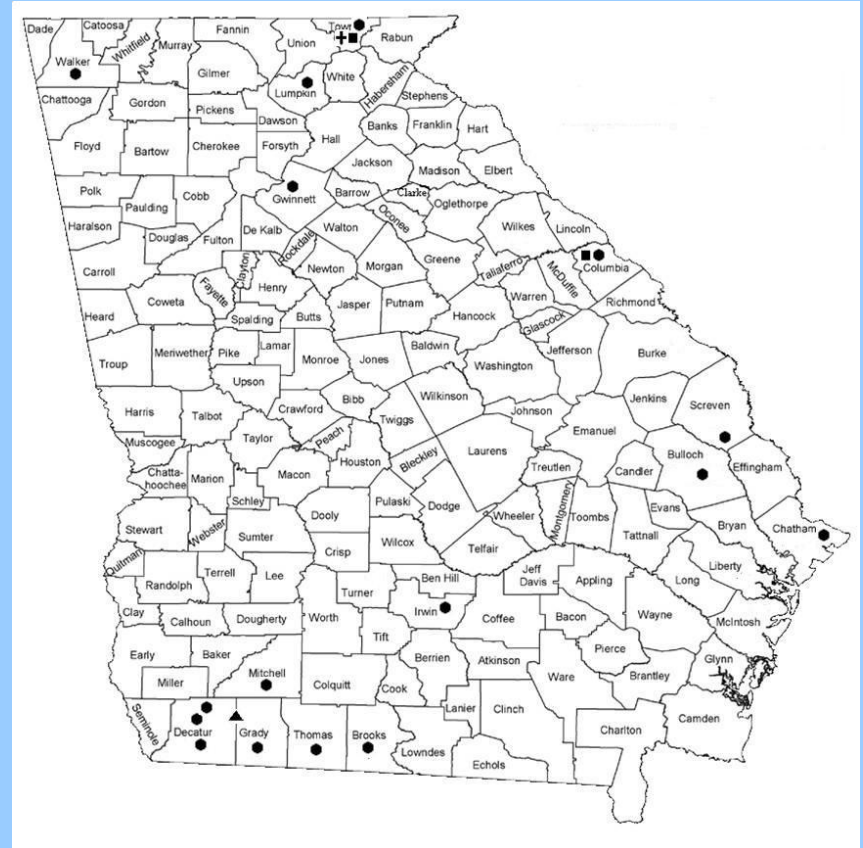
Xenopsylla cheopis (post-1958)



Pulex irritans (circles)

Pulex simulans (squares)

Pulex sp. (triangles)



Ctenophthalmus pseudagyrtis (circles)

Doratopsylla blarinae (squares)

Conorhinopsylla stanfordi (triangle)

Nearctopsylla georgiana (plus sign)

CONCLUSIONS - 1

- At least 25 flea species are native to Georgia.
- 1 recorded species (*Cediopsylla inaequalis*), was introduced on western US lagomorphs (for hunting) & is probably not established in Georgia.
- 5 recorded species represent new state records for Georgia.
- Fleas of domestic *Rattus* were common in Georgia until at least the 1940s but currently appear to be rare (because of rat & rat flea control in relation to murine typhus control).
- The cat flea, rabbit flea & squirrel flea are common & widespread in Georgia.
- The dog flea can be common in some Georgia localities.
- *Pulex* spp. fleas have restricted distributions but can be common esp. on carnivores.

CONCLUSIONS - 2

- Some fleas are more common in southern Georgia (*Polygenis gwyni*, *Echidnophaga gallinacea*, *Sternopsylla distincta*, *Conorhinopsylla stanfordi*, *Peromyscopylla scotti*).
- Some fleas are more common in northern Georgia (*Epitedia cavernicola*, *Peromyscopsylla hesperomys*, *Doratopsylla blarinae*).
- The sticktight flea (*Echidnophaga gallinacea*) feeds on both mammalian and avian hosts (including dogs, rats and chickens) in Georgia.
- *Rickettsia typhi*, *R. felis*, *R. prowazekii*, *Bartonella henselae* & other *Bartonella* species/strains have been detected in Georgia fleas.
- 1 flea species (*Nearctopsylla pfitzeri*) is endemic to Georgia.

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