Ticks of Florida: Basic Identification

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Tick Identification

- A good tick key is needed
  - Google is making this easier, but beware of Google Image
- Helpful to know
  - Where the tick was collected
  - From what animal
  - What time of year

Initial questions to ask:

1. Is it a hard or soft tick?
   a. Sometimes an engorged hard tick may appear as a soft tick

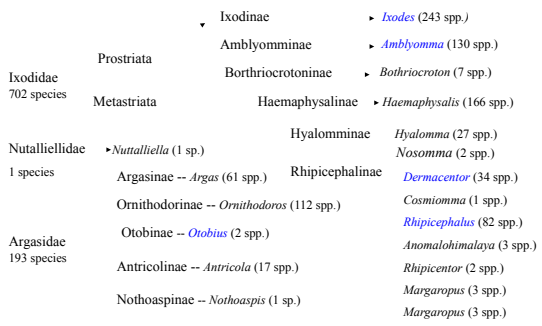
2. What is the life stage: larva, nymph or adult?
   a. Critical for use of most ID keys
   b. Unfed much easier to ID than engorged

Metastigmata: Ticks

Characterized by…

- No distinct head
  - mouthparts (palpi & hypostome) + basis capituli = capitulum (head-like structure)
- 4 pairs of legs, except larvae (3 pr.)
- 1 pr. simple eyes, or eyeless
- Stigmata located behind the 4th pair of legs
- Scutum = plate that covers dorsum
  - patterns, colors, and shape often species specific

Evolutionary Relationships between Ticks



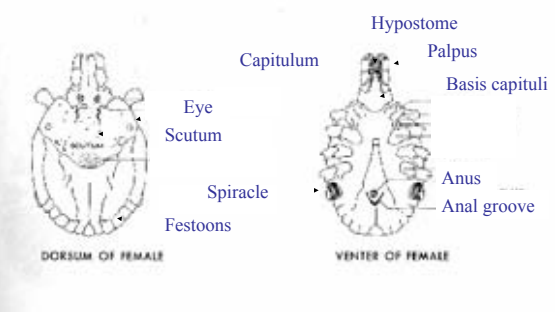
Soft vs. Hard Tick Morphology

		Argasidae Soft Ticks	Ixodidae Hard Ticks
	Sexual dimorphism	Slight	Differential scutum size and markings
Head	Capitulum	Ventral: Not seen from above	Anterior: Can see from above in unbloodfed ticks
	Palpi	Leg-like w/subequal segments	Relatively rigid, varied forms
Body	Scutum	Absent	Present
	Festoons	Absent	Generally present
	Eyes – if present	Super-coaxial folds	Dorsal on sides of scutum
Legs	Coxae	No spurs	Generally, 1+ spurs

Ixodidae = Hard ticks

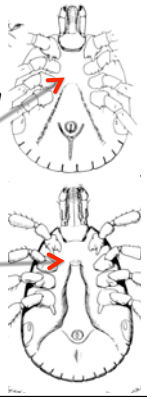
- 1 pr. Spiracles latero-ventrally on abdomen near 3rd. and 4th leg bases
- Festoons = along posterior sub-marginal area of dorsum, thought to help in expansion and contraction
- Anal groove = may show location of anus; either in front, beside, or behind the anus
- Eyes (if present) are located on the lateral edges of the scutum
- Mouthparts visible from above
- Females mate, feed, oviposit (1x) then die
  - 1K to 18K eggs

Family Ixodidae (hard ticks)

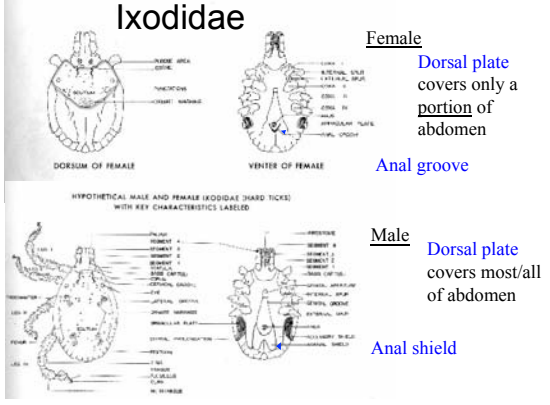


Tick Lifestage

- Leg number
  - Larva = 6
  - Nymph & Adult = 8
- Genital pore
  - Nymph – No
  - Adult - Yes



Ixodidae



Female

Dorsal plate covers only a portion of abdomen

Anal groove

Male

Dorsal plate covers most/all of abdomen

Anal shield

Black-legged or Deer tick
Ixodes scapularis

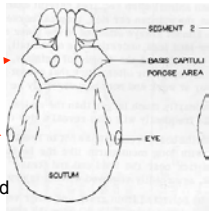
- Long mouthparts
- No Festoons
- No Eyes
- Anal groove is conspicuous and anterior to the anus (posterior to anus in all other hard ticks) – next slide
- Which of these is the female?

Ixodes scapularis

Ixodes scapularis

Brown dog tick
Rhipicephalus sangiuneus

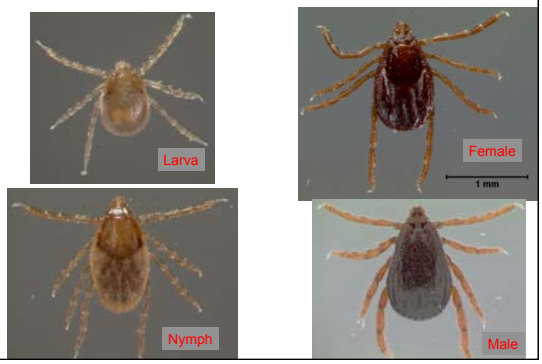
- Feeds on dogs in U.S.
  - Dogs and humans elsewhere in world
- Short mouthparts
- Hexogonal basis capituli
- Scutum may have punctuations and grooves forming patterns – never w/white markings
- Eyes present
- Festoons present
- Anal groove is posterior to anus and obvious
- Anal plates in males are conspicuous



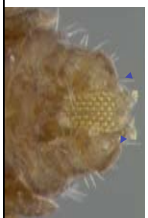
Rhipicephalus sangiuneus

Rhipicephalus sangiuneus

Rhipicephalus sangiuneus

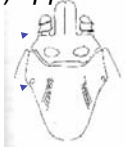


Cattle ticks
Rhipicephalus (*Boophilus*) *spp.*



Engorged

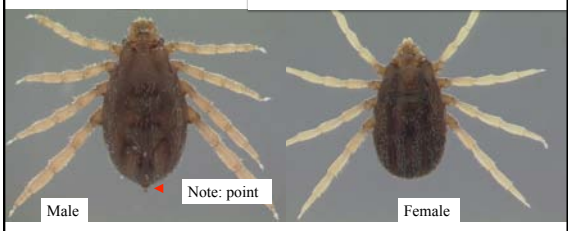
B. microplus



- Regulatory species
- Very short palpi
  - Shorter than hypostome
- Eyes present
  - But very small
- Inornate and brown
- Basis capituli: short and broad with rounded lateral margins.
- Anal plate well developed & large in males
- One host parasites of ungulates
  - Primarily cattle, but also deer, African antelope

Tropical or Southern cattle tick
Boophilus microplus

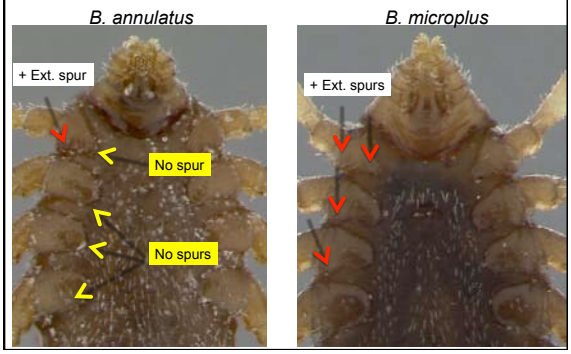
- Vector of Texas cattle fever (Bovine babesiosis)
- Eradicated from US in 1943



Cattle Tick
Boophilus annulatus

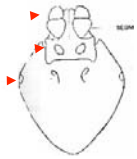
- Vector of Texas cattle fever (Bovine babesiosis)
- Eradicated from US in 1943

Boophilus Females



American dog tick
Dermacentor variabilis

- Large ticks with complex patterns of white on scutum
- Fairly short mouthparts
- Basis capituli appears rectangular
- Eyes present
- 11 Festoons
- Shape narrows toward head
- Scutum highly ornate, but variable
- No anal plates and anal groove is inconspicuous

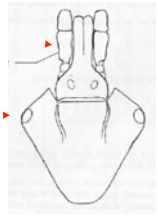


Dermacentor variabilis

Female Male

Amblyomma

- Long fragile mouthparts – segment 2 at least twice as long as segment 3
  - Only *Ixodes* has similarly long mouthparts
- Eyes present – not in sockets
- Anal groove obvious
- Scutum usually with bright pattern
- Very small anal plate
- Worldwide distribution



Lone star tick
Amblyomma americanum

- Most common tick in North/Central Florida
- Females w/ 1 large white spot at end of scutum
- Males w/ 4 white spots on lateral sides of scutum and coloration on festoons
- Nymphs have no spots, with short scutum
- 3-host ticks, will attack humans in all stages
- Vector Erlichiosis, RMSF and Tularemia

Lone star tick
Amblyomma americanum

Female

Male

Lone star tick
Amblyomma americanum

Unengorged Nymph

Engorged Nymph

Gulf Coast tick
Amblyomma maculatum

- Female:
  - Scutum is longer than wide
  - Ornate, w/reddish-brown markings over pale cream background
- Male:
  - Oval, pale in color with elongated reddish-brown mottling

- Adults on: cattle, horses, deer, swine, coyotes, dogs, cats, etc.
- Increasing importance as a vector
- Range expansion??
- Unfed appears similar to *D. variabilis*, but mouthparts are much longer in *A. maculatum*

Female

Male

Differentiating Males

Lone star

Gulf coast

Cayenne Tick
Amblyomma cajennense

- Perhaps Southern FL, also Southern Texas
- Very long mouthparts
- Females: Tan-colored scutum that has dark markings creating the image of a pendant-like tan necklace
- Males: Scutum coloration ranges from tan to golden-beige, often with rust-colored patches on dark-brown mottled striations

Tropical Bont tick
Amblyomma variegatum

- Very large ticks
- Metallic coloration, particularly males
- Vector several viruses, heartwater disease
- Common throughout tropics
- Found on cattle on St. Croix, US Virgin Is. & other islands

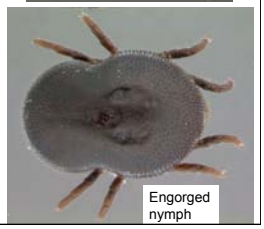
A. variegatum

Family Argasidae: Soft ticks

- Integument is leathery, wrinkled, granulated
- Head not visible from dorsal side, covered by dorsal shield (Hood)
- Eyes, if present, are on sides above 2nd coxae
- Most are parasites of nesting animals – birds and rodents.
- Most feed multiple times as an adult, with repeated egg batches
- Spinose ear tick is the exception to both of these rules.

Spinose ear tick
Otobius megnini

- Gray to light-brown in color
- Oval body with a constriction midway
- Only larvae, and 2 nymphal instars feed on 1 host
- Well developed chelicerae
- Has spines or thick bristles all over body of nymph
- Found in North/South America, Africa, and Asia



Tick ID Resources

- Keirans and Litwak. 1989. Pictorial key to the adults of hard ticks, Family Ixodidae (Ixodida: Ixodoidea), East of the Mississippi River. J. Med. Entomol. 26: 435-448.
- Ticks of Veterinary Importance: http://naldc.nal.usda.gov/download/CAT87208761/PDF
- Order: Interactive Program for Teaching Tick Morphology: http://www.afpmb.org/teaching-cds
- Tick Encounter: http://www.tickencounter.org/tick_identification
- Tick App: http://tickapp.tamu.edu/