Tick Identification 101

James Occi
PhD Candidate
Center for Vector Biology
Department of Entomology
james.occi@rutgers.edu
and
Microbiologist
New Jersey Department of Health
Molecular Virology
PHEL
James.occi@doh.nj.gov

Center for
VECTOR BIOLOGY
RUTGERS

RUTGERS
School of Environmental
and Biological Sciences

Two ways to ID Ticks

1. Professional Way: The Dichotomous Key (mandatory for *Ixodes*)

4(3) Anal groove passes around front of anus . . . . Ixodes

(Anal groove is present or obsolete (difficult to see or absent), but always embracing the posterior of the anus. ……10

5 (4)All coxae unarmed (without spurs). 6

At least some coxae armed. 7

6 (5) Coxa I contiguous (touches) with basis capituli (even when engorged) . . . .I. uriae

Coxa I not contiguous with basis capituli. . . . . .

2. Cheating (or Semi-professional way)

You have an idea what ticks you have in your area and you can narrow it down.

…of course this can backfire…

Three Most Abundant Indigenous Species in Northeast

1 mm

Blacklegged tick, *Ixodes scapularis*
Female, male, nymph

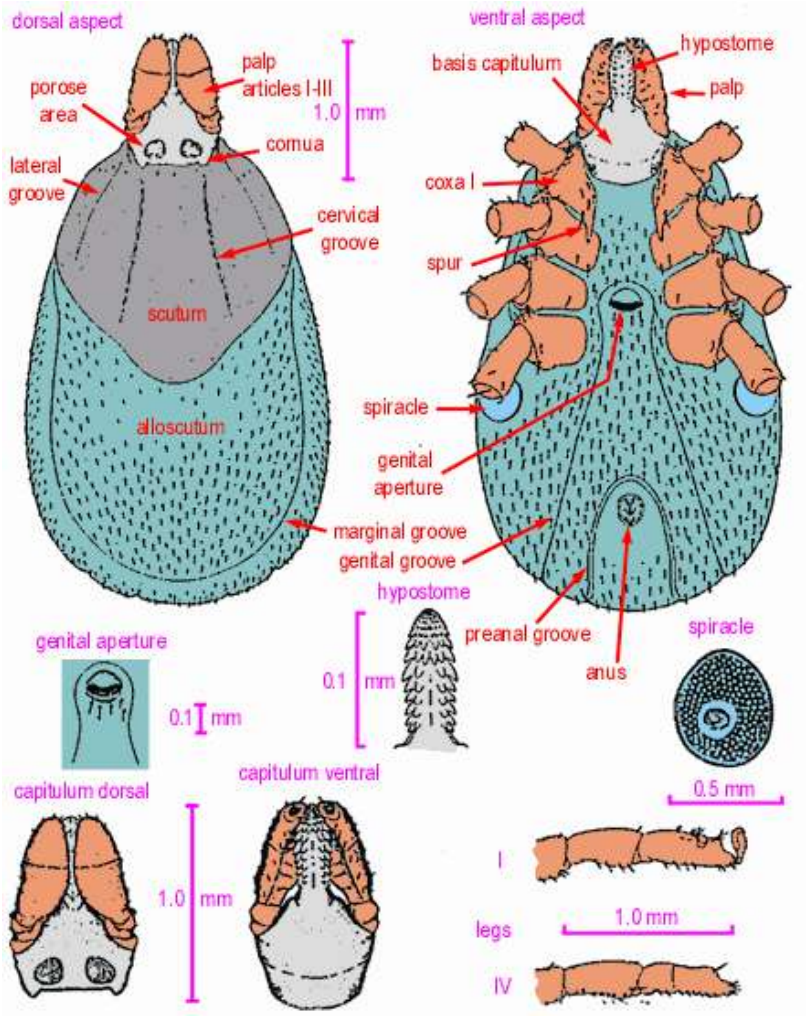
American dog ticks, *Dermacentor variabilis*
Female, male

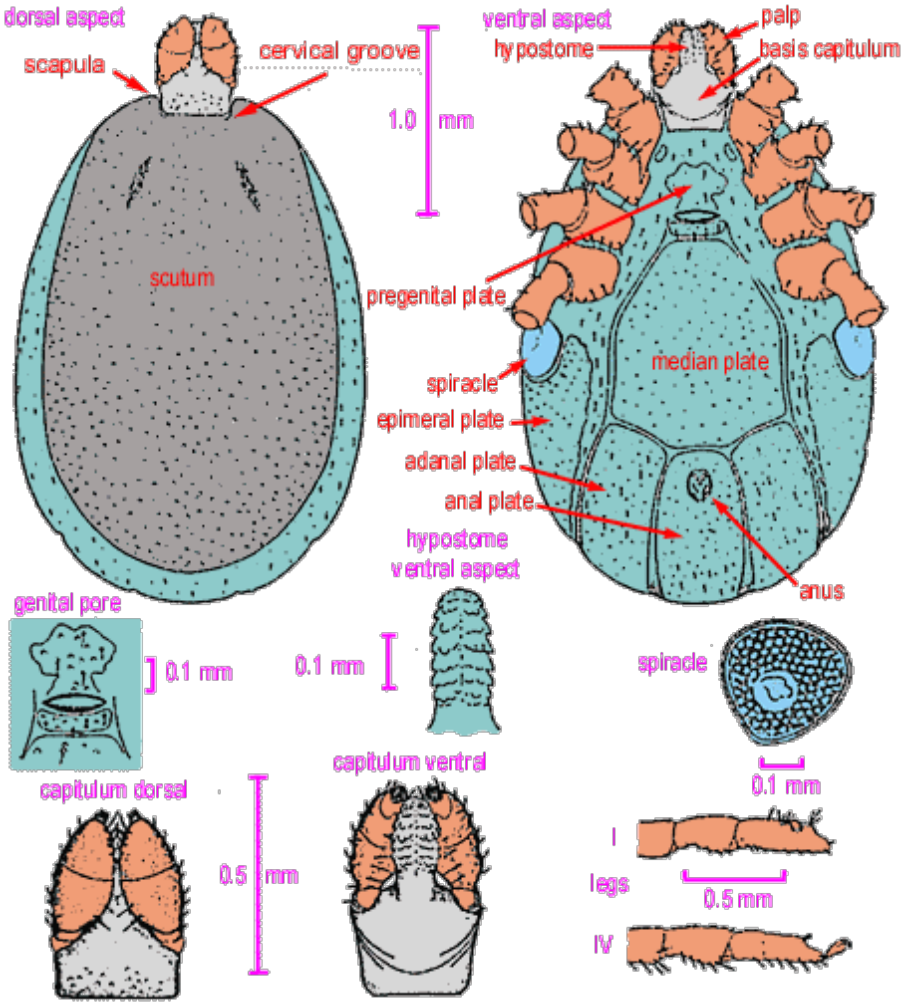
Lone star tick, *Amblyomma americanum*
Female, male nymph

Not photographed to scale, see mm ruler

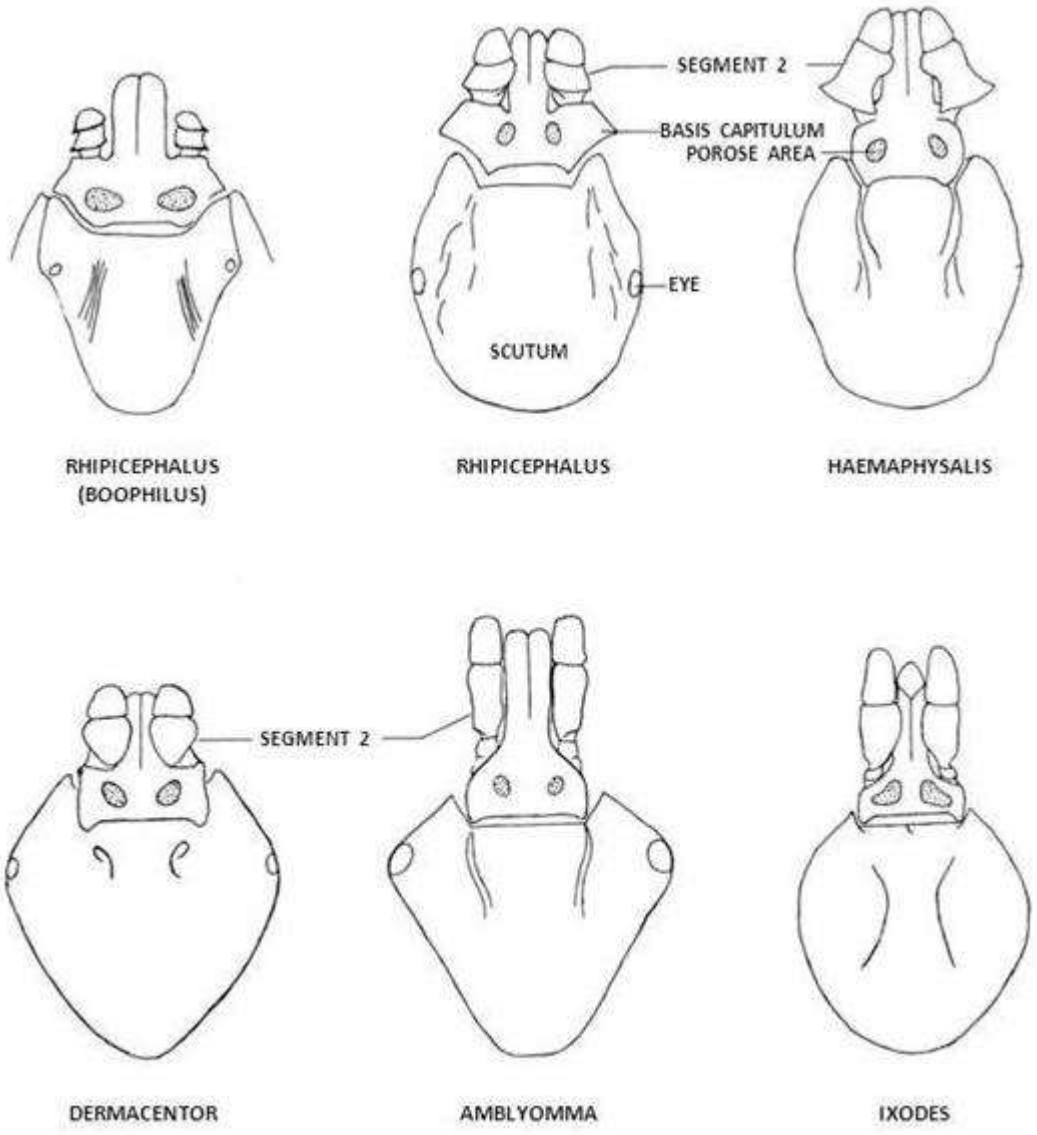
Generic Hard Tick Anatomy and Key Terms

http://www.lowchensaustralia.com/pests/paralysis-tick/basic-anatomy.htm





Key features of mouthparts, basis capitulum and scutum



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Ticks

Class *Arachnida* > Order: *Acarina* > Family: *Ixodidae*

Relative Length of Palpus to Length of Basis Capituli

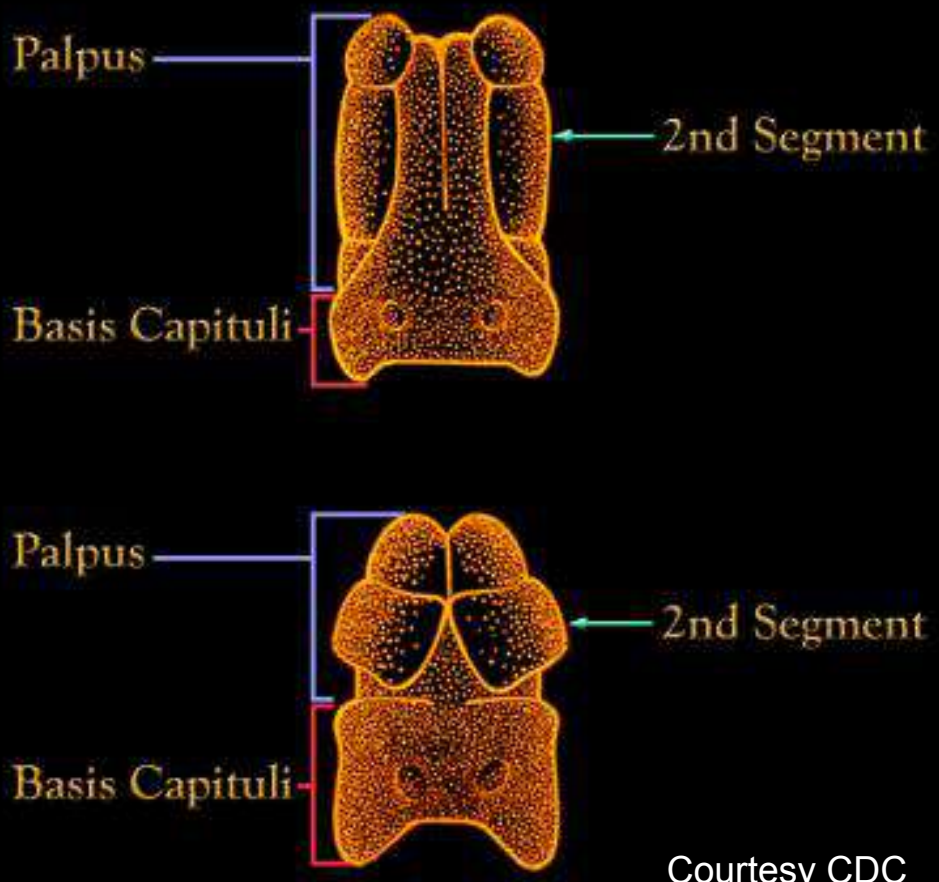
Genera:

Palpus is Longer than Basis Capituli:

Amblyomma

Palpus is as Long as Basis Capituli:

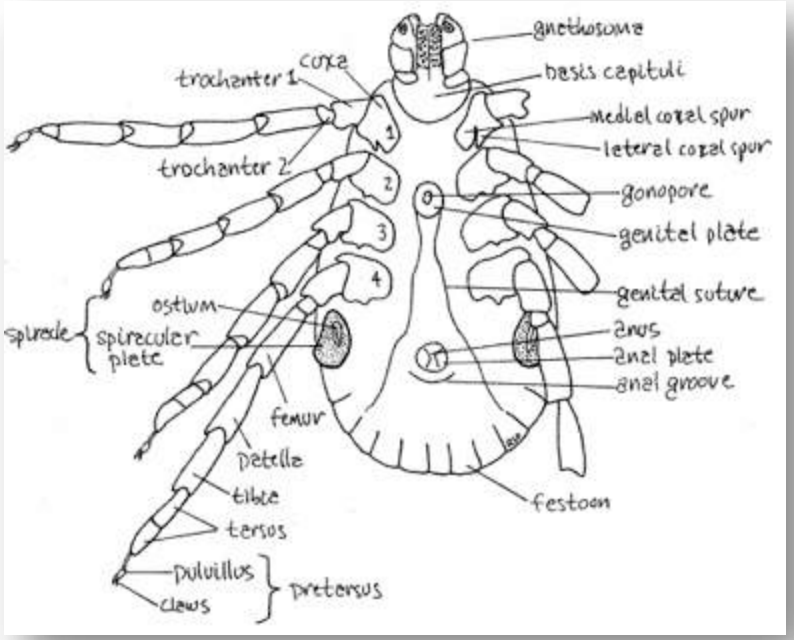
Anocentor
Boophilus
Dermacentor
Haemaphysalis
Rhipicephalus



Courtesy CDC

First Step: What stage/sex is it?

Character	found on…
6 legs	- larvae only (nymphs, male, female 8 legs)
Scutum entire?	- in males only
Genital aperture?	- males and females only
Porous area?	- females only



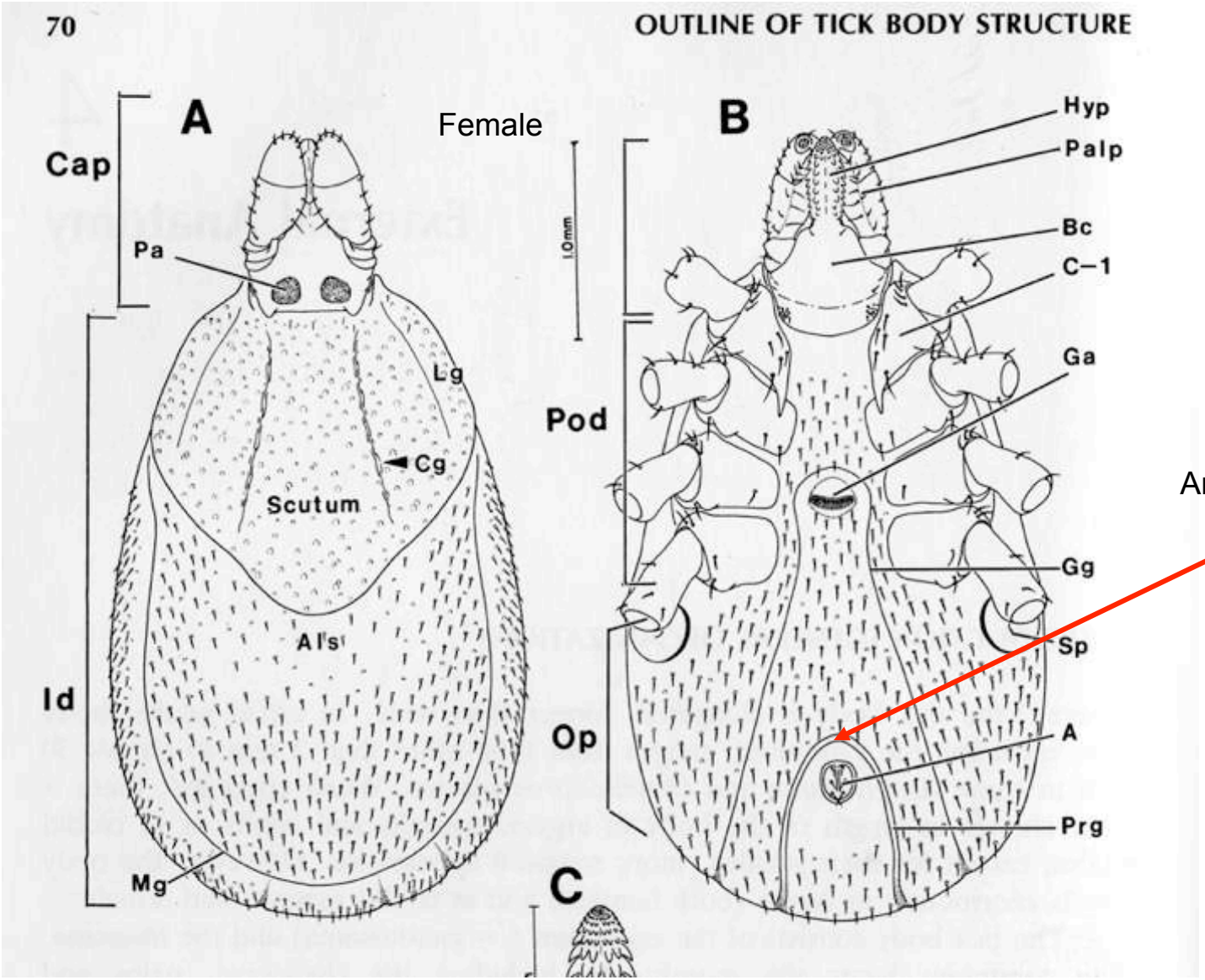
Characteristics to easily separate common North American Tick Genera

Ixodid Ticks

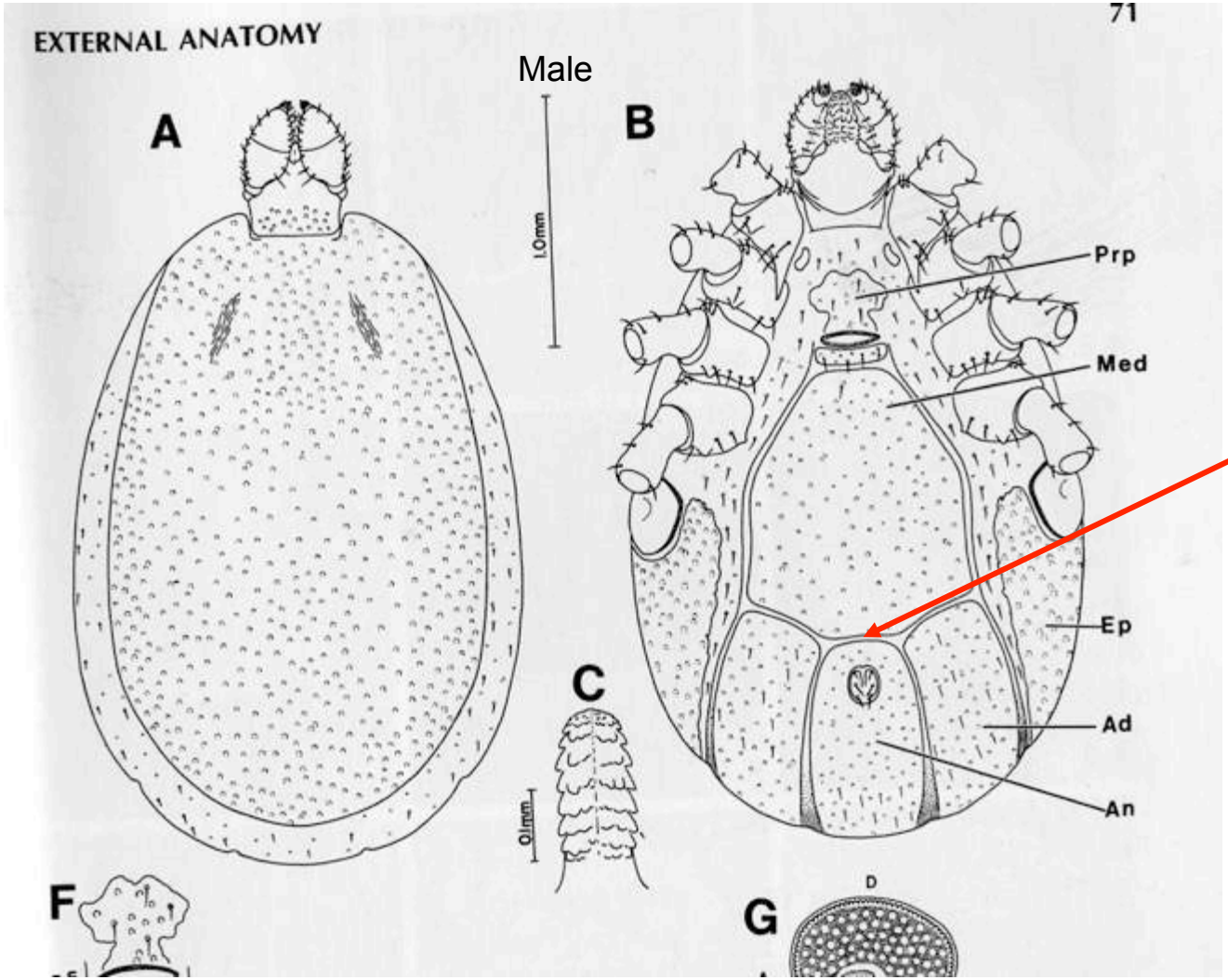
Genus	Outline of BC	Festoon	Ornate?	Palps	Anal groove
Amblyomma	triangular	yes	yes	long	below
Dermacentor	rectangular	yes	yes	short	below
Haemaphysalis	rectangular	no	no	short	below
Ixodes	rectangular	no	no	short male, long female	above
Rhipicephalus	hexagonal	yes	no	short	below

Courtesy of Richard G. Robbins PhD, Smithsonian/WRBU

Basic Tick Anatomy *Ixodes*



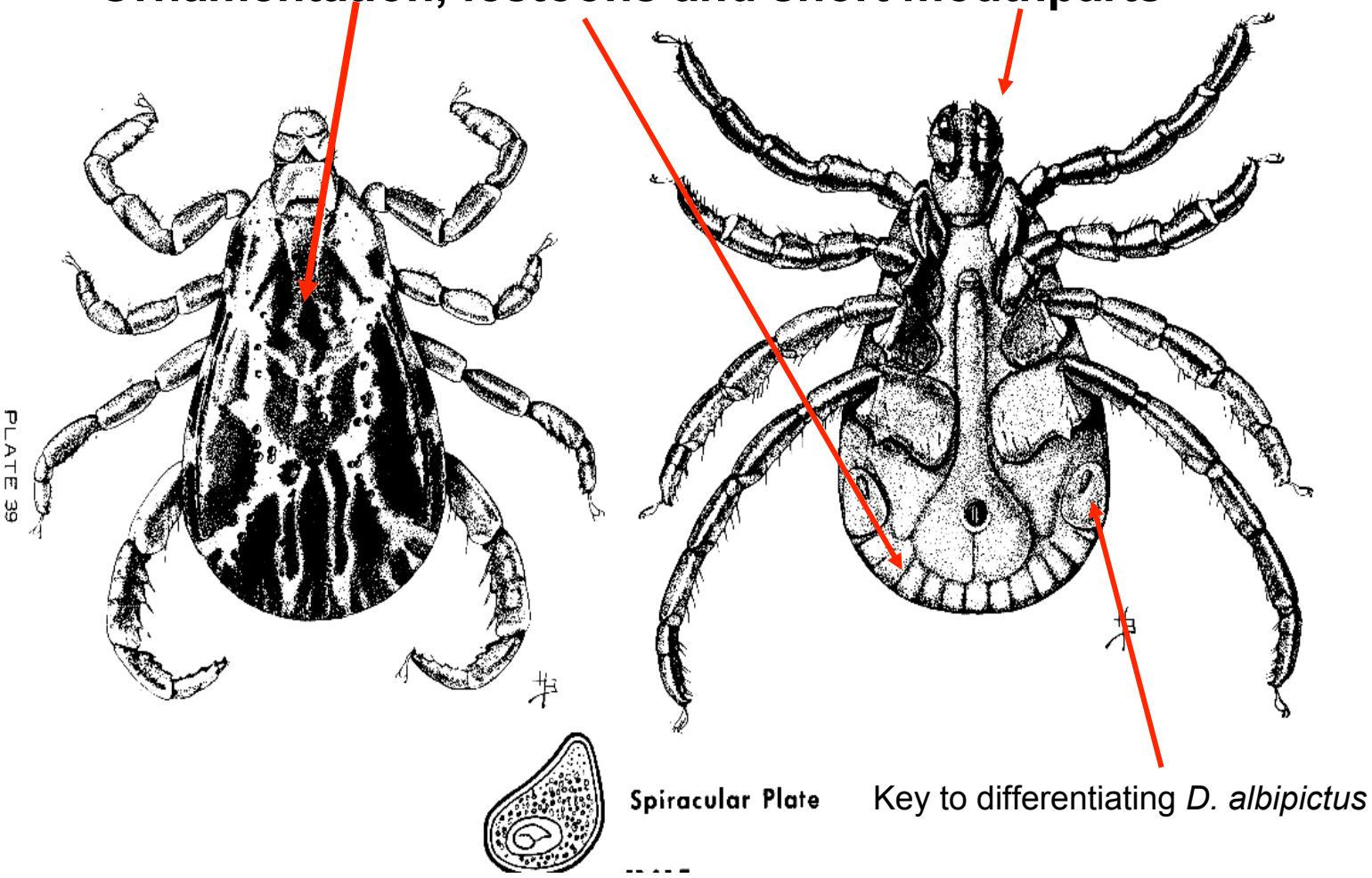
Basic Tick Anatomy *Ixodes*



Dr. Richard G. Robbins: “All male *Ixodes* have an anal groove, but because the male venter is completely covered in plates (something never seen in other ixodid genera), the anal groove simply defines the boundaries between plates.”

Basic Tick Anatomy *Dermacentor*

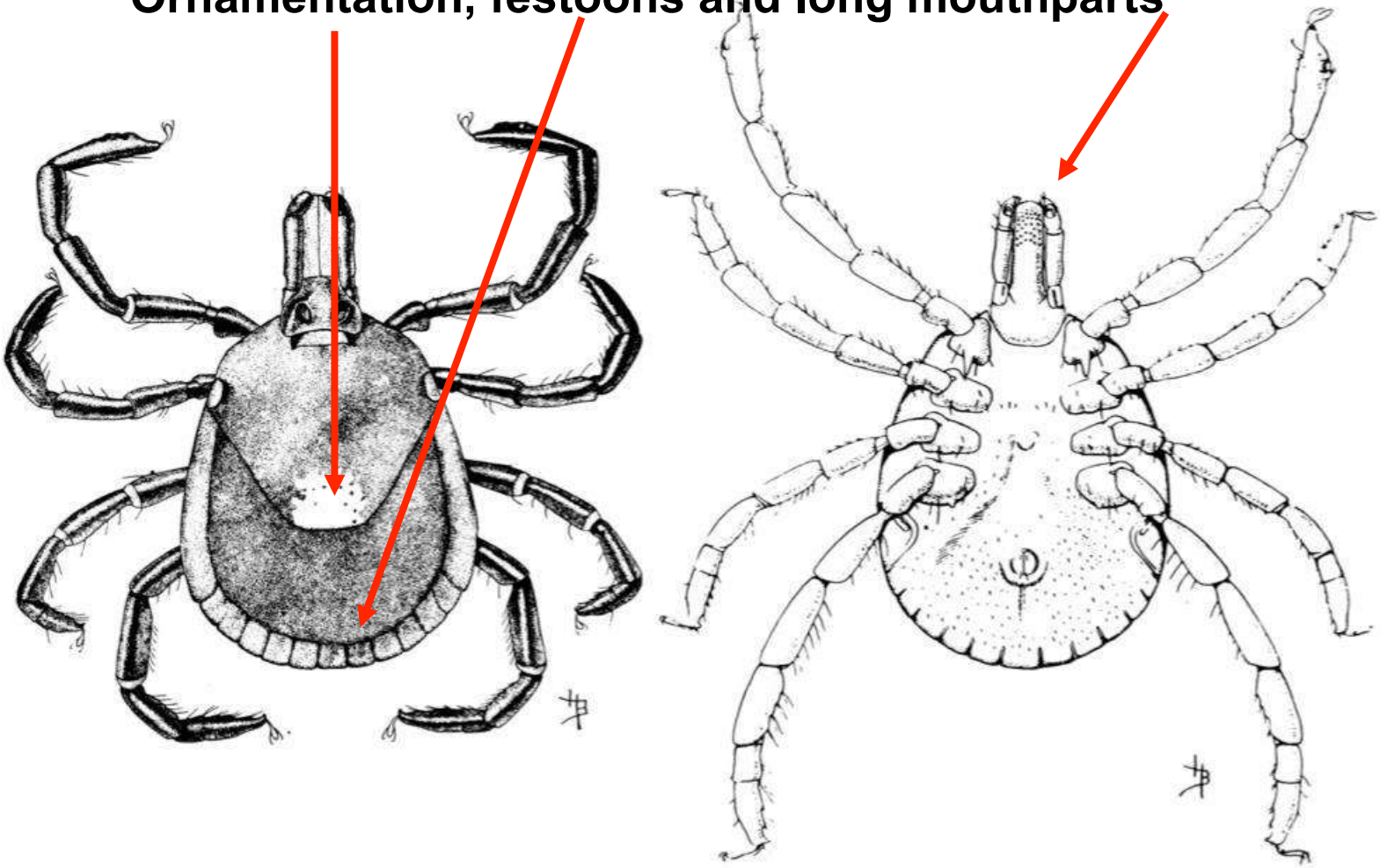
Ornamentation, festoons and short mouthparts



Ticks of Veterinary Importance USDA-APHIS Handbook #485, m1976

Basic Tick Anatomy *Amblyomma*

Ornamentation, festoons and long mouthparts



Ticks of Veterinary Importance USDA-APHIS Handbook #485, m1976

And now for some shortcuts in tick ID

"Don't worry... I know a short cut."

Nelson Delgado

Identifying engorged females

Ornamentation of scutum (or not i.e. *Ixodes*) and shape of basis capitulum

University of Rhode Island Tick Encounter Resource
http://www.tickencounter.org/

Ixodes affinis vs *I. scapularis*

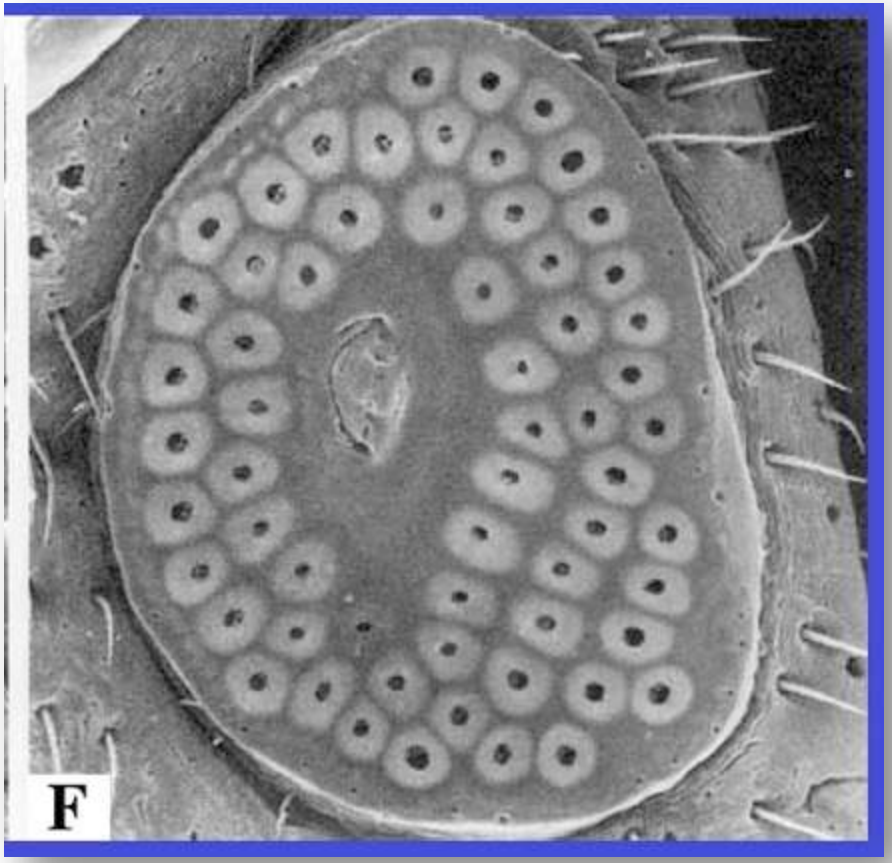
Punctations on scutum

Army Public Health Center phc.amedd.army.mil

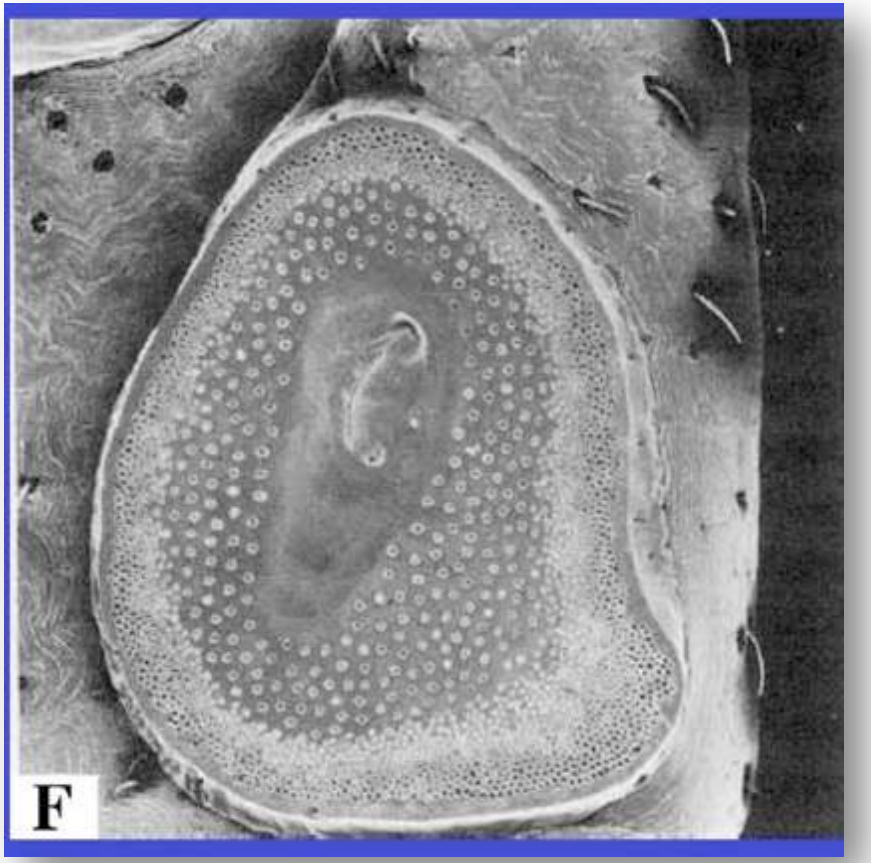
Dermacentor albipictus vs *D. variabilis*

Spiracular Plate:

Dermacentor albipictus



Dermacentor variabilis



Dermacentor variabilis vs *Amblyomma macultum*

Gulf coast ticks vs American dog tick

Which Genus do these belong to?

Hint: They are engorged females and found in New Jersey

Ixodes scapularis

Nymphal (May-July)
and larval (Aug-Sept) environment

Adult *I. scapularis* season and environment

Watchung Reservation (Union County)
14-January 1995, Temp = 60°
Flagged 25 adult *Ixodes scapularis*

Dermacentor variabilis, American dog tick June 2017

Long Beach Island (Ocean Co.)
194 *Dermacentor variabilis* in 40 min

55 *Dermacentor variabilis* 15 min.
Stokes State Forest (Sussex Co.)

Amblyomma americanum collections

Amblyomma americanum:
51 nymphs and 16 adults ~ 20 min @ Tuckerton, NJ Ocean Co

11 *A. americanum* and 14 *D. variabilis* ~ 40 min @ Shark River Pk, Monmouth Co.

Hannah the sheep, Aug., 2017

Andrea Egizi

Tadhgh Rainey

Rich Robbins

Haemaphysalis longicornis basics

- Three-host tick (feeds once each stage on a different host)
- Parthenogenetic (lays 800-2000 viable eggs without mating)
- Native to NE China, Korea, Japan (invasive in Australia/NZ)

female ovipositing and nymphs questing on grass

*Haemaphysalis longicornis (*Asian long-horned tick)

Why is this tick potentially such a big problem?

1. Transmit animal pathogens: *Theileria, Babesia* (NZ, AU).

2. Transmit human pathogens: *Rickettsia japonica* and SFTV (sever fever and thrombocytopenia virus)

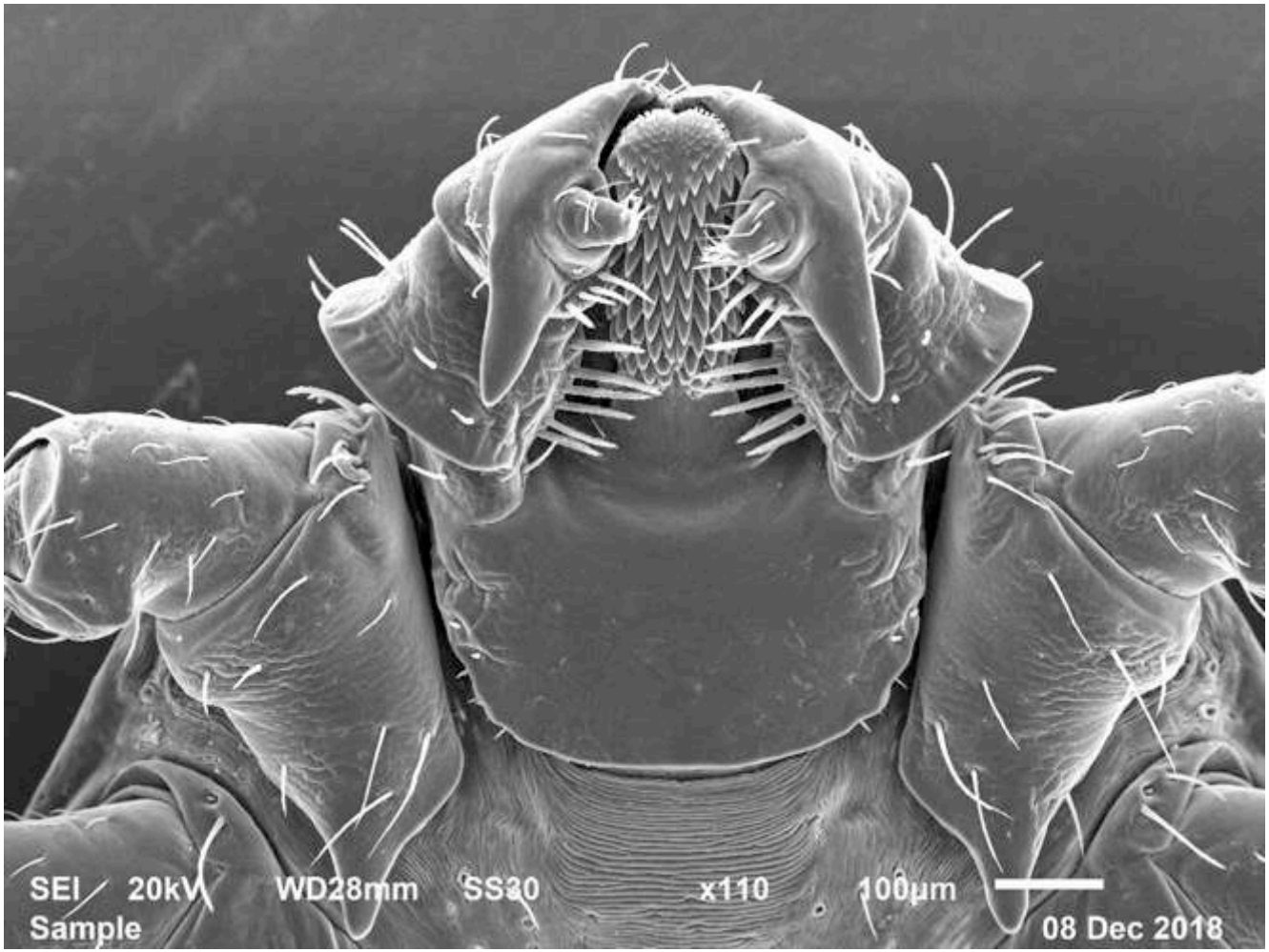
3. Has been found infected with: *Ehrlichia, Borrelia, Anaplasma* in its indigenous areas.

4. Parthenogenetic: Can lay viable eggs without mating!

Habitat of *Haemaphysalis longicornis*, Asian longhorned tick

How do you ID *H. longicornis*?

Egizi et al (2019) ZooKeys 818: 117–128



Rabbit ticks vs Asian longhorned ticks (nymphs)

Rabbit tick, *Haemaphysalis leporispalustris*

Asian longhorned tick, *H. longicornis*

Questions?

Resources

Fact sheets from Rutgers New Jersey Agricultural Experiment Station
American Dog Tick FS: http://njaes.rutgers.edu/pubs/publication.asp?pid=fs092
Lone Star Tick Fact Sheet: https://njaes.rutgers.edu/fs1281/
Blacklegged tick FS: in progress

Tick Management Handbook: http://www.ct.gov/caes/lib/caes/documents/special_features/tickhandbook.pdf

University of Rhode Island Tick Resource Web Site: http://www.tickencounter.org/

Centers for Disease Control and Prevention Tick page: https://www.cdc.gov/ticks/

Monmouth County Mosquito Control: https://co.monmouth.nj.us/page.aspx?ID=177

Companion Animal Parasite Council Prevalence Maps: https://www.capcvet.org/maps/

My web site with tick images: www.jimocci.com (scroll down to “Ticks of the World”)

Jim Occi
PhD Candidate
Center for Vector Biology/Rutgers Entomology
Research Microbiologist
New Jersey Department of Health

New Jersey TICK BLITZ

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