Some Ixodid Ticks of the Southwest Gaining Notoriety

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Ixodid versus Argasid Ticks: they differ in appearance; longevity; maturation; when they bite; and where they encounter their hosts

Feature	Hard Tick	Soft Tick
Scutum (dorsal shield)	Present	not present
Capitulum (mouth parts)	anterior, visible from above	ventral, not visible from above
Nymphal stages	One	Several
Adult feeding time	several days	30-60 min
Female blood meals	One	Several
Egg laying events	One	Several
Total eggs laid	3,000-8,000	400-500

(SOURCE: https://extension.entm.purdue.edu/publichealth/insects/tick.html)

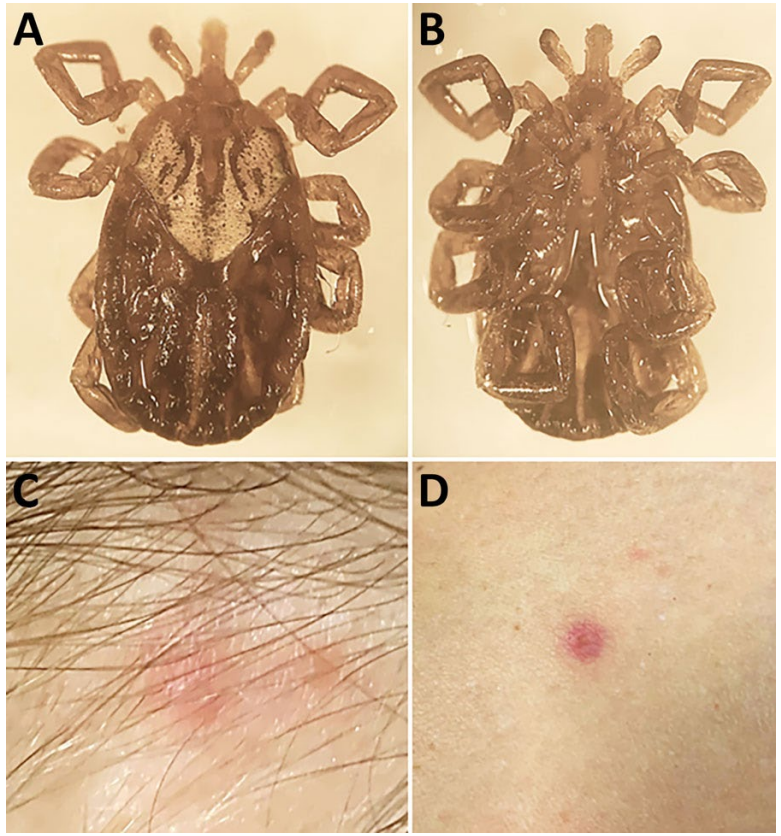
Topics for today

- Two ixodid species for today: *Dermacentor occidentalis* (Pacific Coast Fever, *R. phillipi*) and *Amblyomma maculatum* complex (Tick Fever, *R. parkeri*)
  - Didier Roualt—remember him?– *The New England Journal* in 2005 showed *Rickettsia parkeri* cases in patients *are* distinct from RMSF
  - Rickettsia spotted fever group: diagnosed by serology

Tick Fever caused by *Rickettsia parkeri*

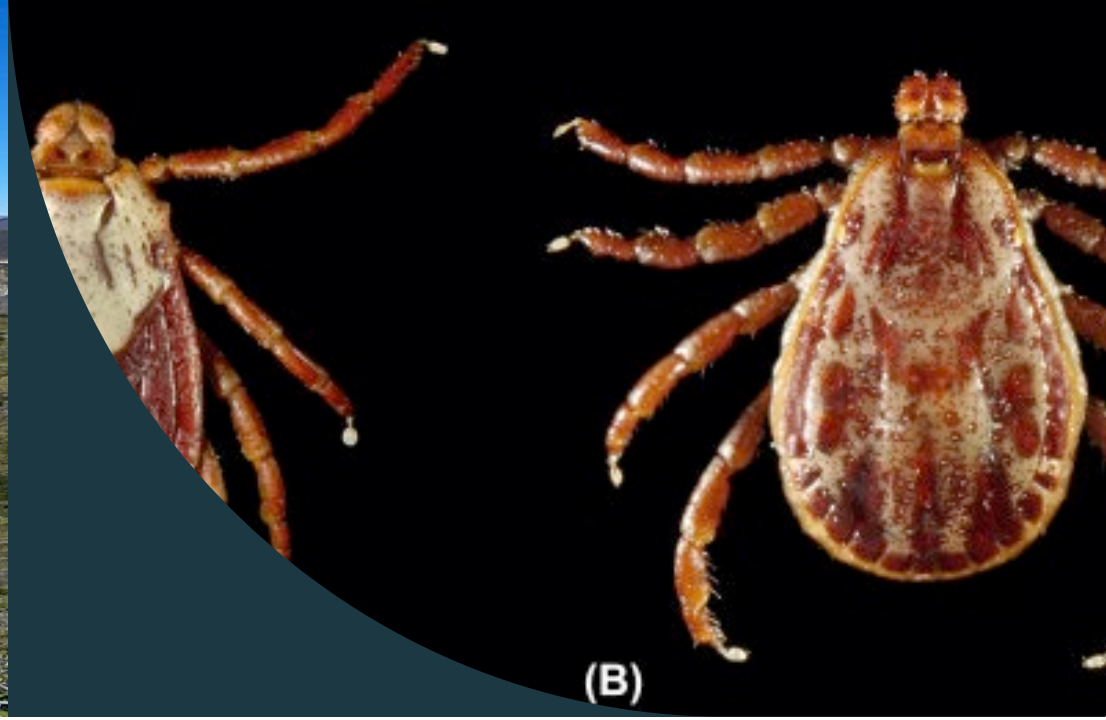
- Pathogen was isolated from *Amblyomma maculatum* ticks in 1937 by Parker
- First human case in US in 2002 in Virginia
- Second most prevalent spotted fever next to RMSF (found throughout Western Hemisphere); vectors are different in SA
- Eschars common with this disease; sometimes multiple

Amblyomma maculatum=Tick Fever (R. parkeri)



Pacific Coast Tick Fever caused by *Rickettsia philipi*

- It is transmitted by Pacific Coast tick, *Dermacentor occidentalis.* The Pacific Coast tick is found predominantly in shrublands, chaparral, and along trails from Oregon to northern Baja California. A variety of small mammals are suspected hosts for this protobacterium.
- Bite results in an eschar at the site of tick bite. The head, neck, forearm, back and shoulder are the most common sites for eschars in the patients identified.
- Specific diagnosis of the PCTF obtained by PCR from an eschar swab, a scab, or a skin biopsy. **Treat with doxycycline 100 mg bid**



Dermacentor occidentalis*=Pacific Coast Tick Fever *(R. phillipi)

Spotted Fevers you may Encounter

Rocky Mountain Spotted Fever

- RMSF) is caused by *Rickettsia rickettsii* and distributed throughout the USA, Canada, Mexico, and South America. Rodents and dogs are the main animal hosts for ticks (*Dermacentor* spp., *Rhipicephalus sanguineus*, *Amblyomma* spp.) carrying the infection.
- RMSF is a moderate to severe infection, featuring a widespread maculopapular rash that becomes petechial and purpuric with areas of necrosis. The complications of RMSF include multisystem involvement, encephalitis, renal failure, amputation secondary to necrosis,. There is a significant mortality risk (up to 30%).

African Tick Typhus

- African tick typhus is caused by *Rickettsia africae* and distributed throughout Sub-Saharan Africa and the West Indies. Cattle are the main hosts for ticks (*Amblyomma* spp.) carrying the infection.
- African tick typhus is typically asymptomatic or mild in severity with a maculopapular or vesicular rash. Unusually, its eschars are often multiple and there may be clusters of people affected at the same time.
- The complications of African tick typhus include prolonged fever and reactive arthritis. The mortality risk is very low.

More Spotted Fevers

Rickettsialpox; mite vectored disease

- **Rickettsialpox**
- Rickettsialpox is caused by *Rickettsia akari* and spread via house mouse mite (*Liponyssoides sanguineus*) to rodents. It occurs in the USA, South Africa, the Balkan states, and the Ukraine (mainly in urban locations) and often arises after the extermination of infected rodents as the mites seek new hosts.
- Rickettsialpox is typically asymptomatic or mild, with a sparse papulovesicular rash. The mortality risk with Rickettsialpox is very low.

Flea-borne spotted fever

- **Flea-borne spotted fever**
- Flea-borne spotted fever is caused by *Rickettsia felis* and is transmitted to its animal hosts, cats, dogs, and rodents, by cat fleas (*Ctenocephalides felis*) worldwide.
- Flea-borne spotted fever is probably mild in severity, with a generalized maculopapular rash.
- The mortality risk for flea-borne spotted fever is low.

Rickettsial diseases

Clinical features

- Fever
- Severe headache
- Myalgia (muscle pain).
- **Rash**

Rash

- The rash typically develops 3–6 days after the onset of illness.
- It often starts on the patient's limbs and spreads to the trunk; the palms and soles of the feet may also be involved.
- The rash is typically maculopapular.
- Petechiae can occur and may lead to areas of necrosis.
- A cutaneous **eschar** may be seen at the site of the tick or mite bite in some of the rickettsial diseases, typically 4–10 days after inoculation.

Interesting Vectors