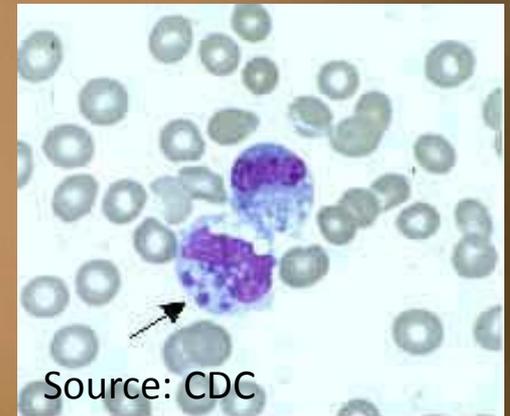


# Anaplasmosis



Western blacklegged tick (*Ixodes pacificus*)

# Anaplasmosis

- Small gram negative bacteria
  - Invade and replicate inside granulocytes (neutrophils)
  - Colonies inside granulocytes are called morula
  - Organism called *Anaplasma phagocytophilum*
- Disease: Human granulocytic anaplasmosis (HGA)





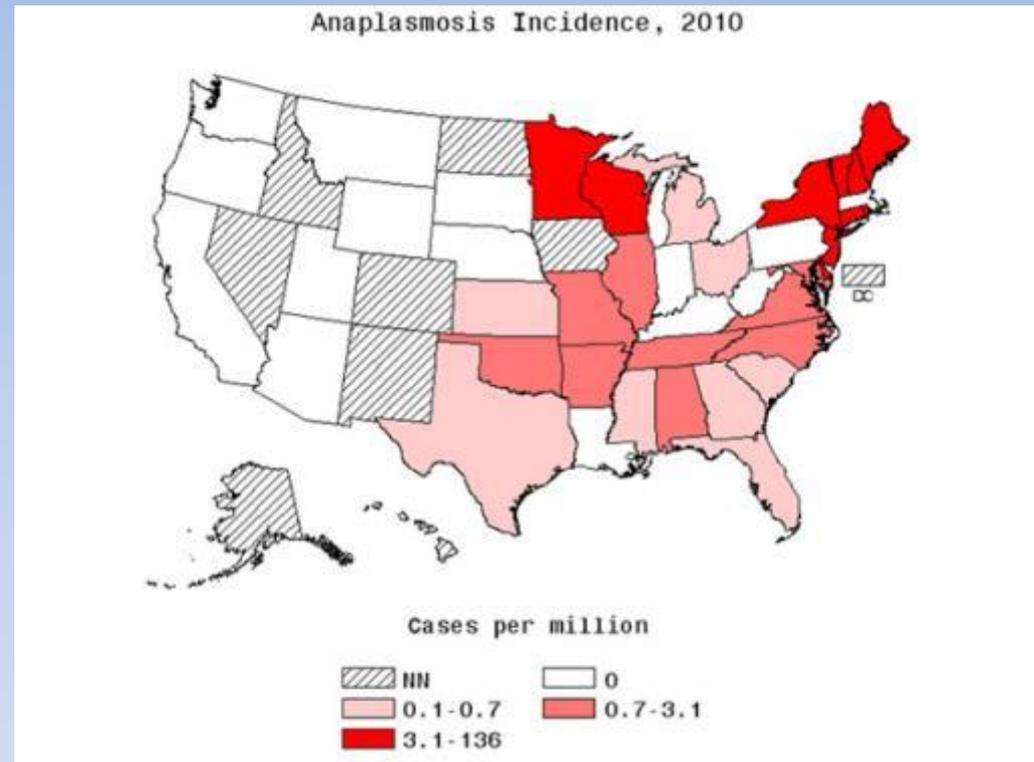
# Anaplasmosis

---

- Clinical
  - Fever, headache, malaise, myalgia common
  - Respiratory and/or GI symptoms (cough/dyspnea, nausea, diarrhea, vomiting) in some
  - Leukopenia and thrombocytopenia common
  - Rash rarely observed with anaplasmosis
  - Incubation period typically 1 week
  - Fatal outcomes rare, often associated with immune-compromised conditions

# Annual Incidence of Anaplasmosis in the United States

- First recognized as a disease of humans in the U.S. in the mid-1990's
  - Become reportable in 1999
- The number of anaplasmosis cases reported has increased steadily
  - 348 cases in 2000, to 1,761 cases in 2010
- The incidence of anaplasmosis has also increased
  - 1.4 cases/million persons in 2000 to 6.1 cases/million persons 2010
- The case fatality rate has remained low (less than 1%)

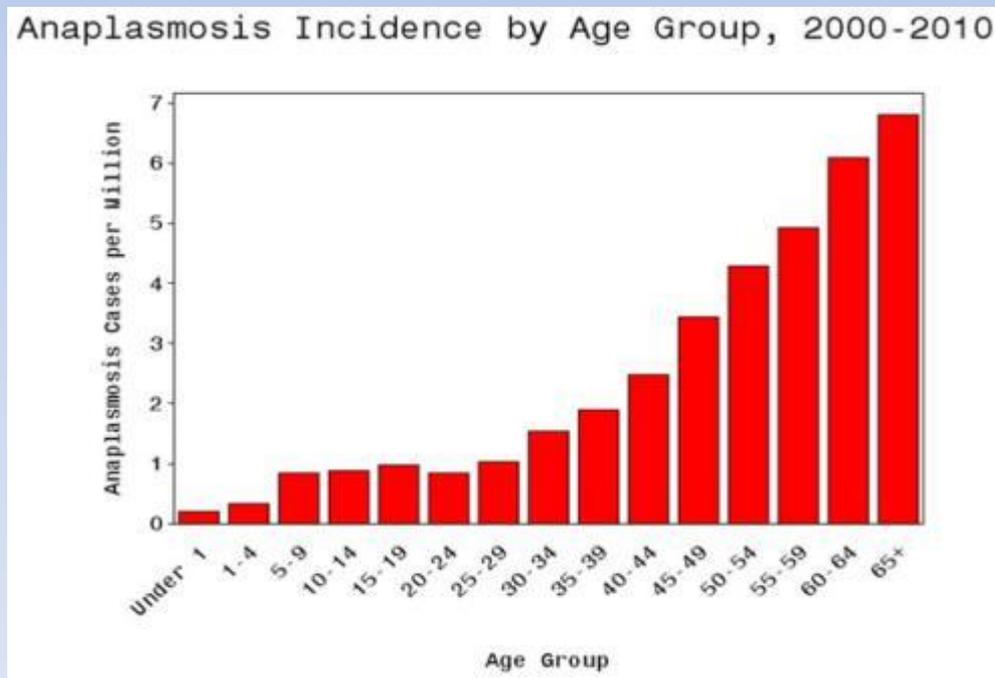


\*NN= Not Notifiable

<http://www.cdc.gov/anaplasmosis/stats/>

# Incidence by Age Group for Anaplasmosis and Ehrlichiosis in the United States 2000-2010

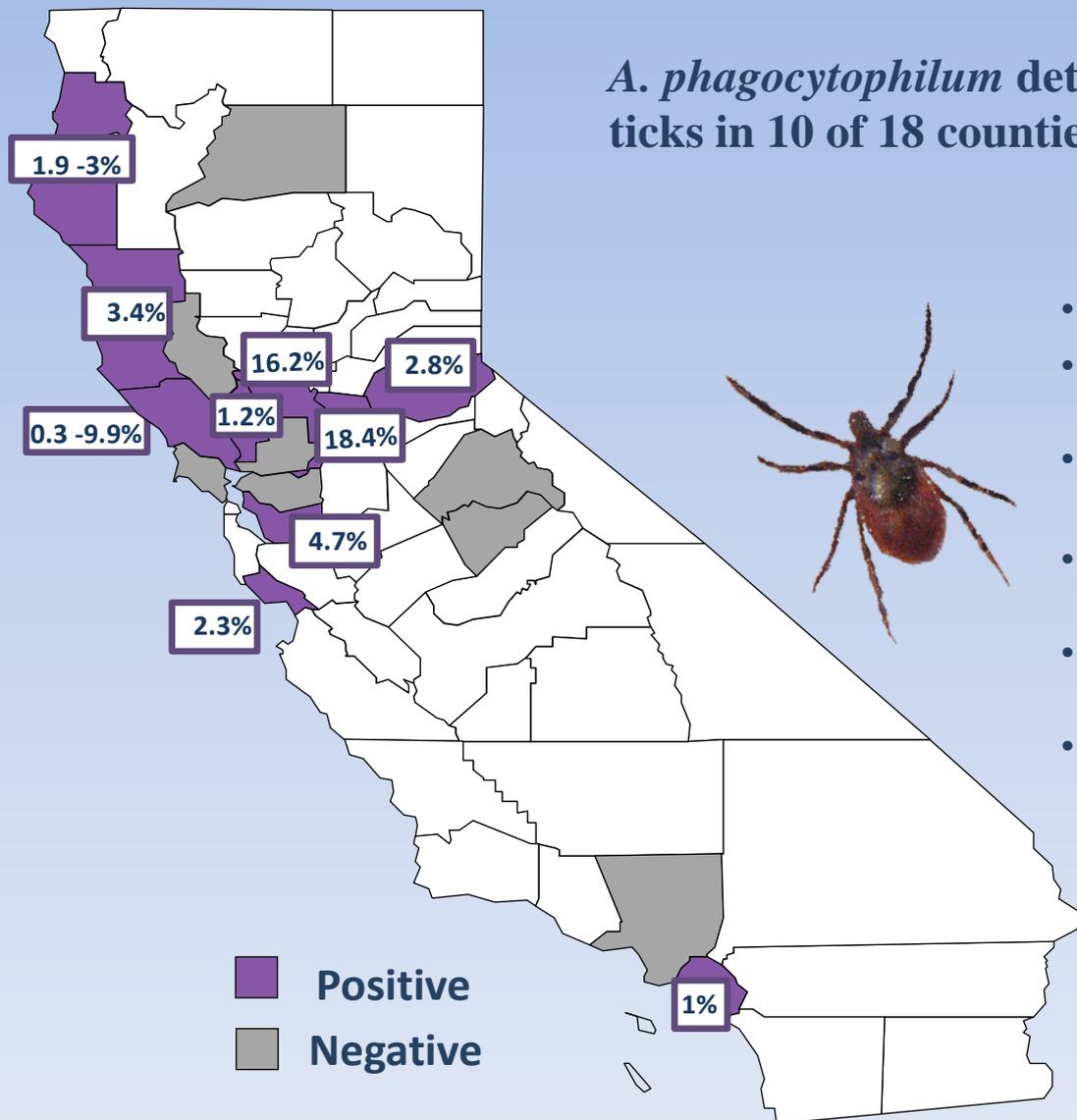
- The frequency of reported cases of anaplasmosis is highest among males and people over 50 years of age
  - A compromised immune system may increase the risk of severe outcome
- Individuals who reside near or spend time in known tick habitats may be at increased risk for infection





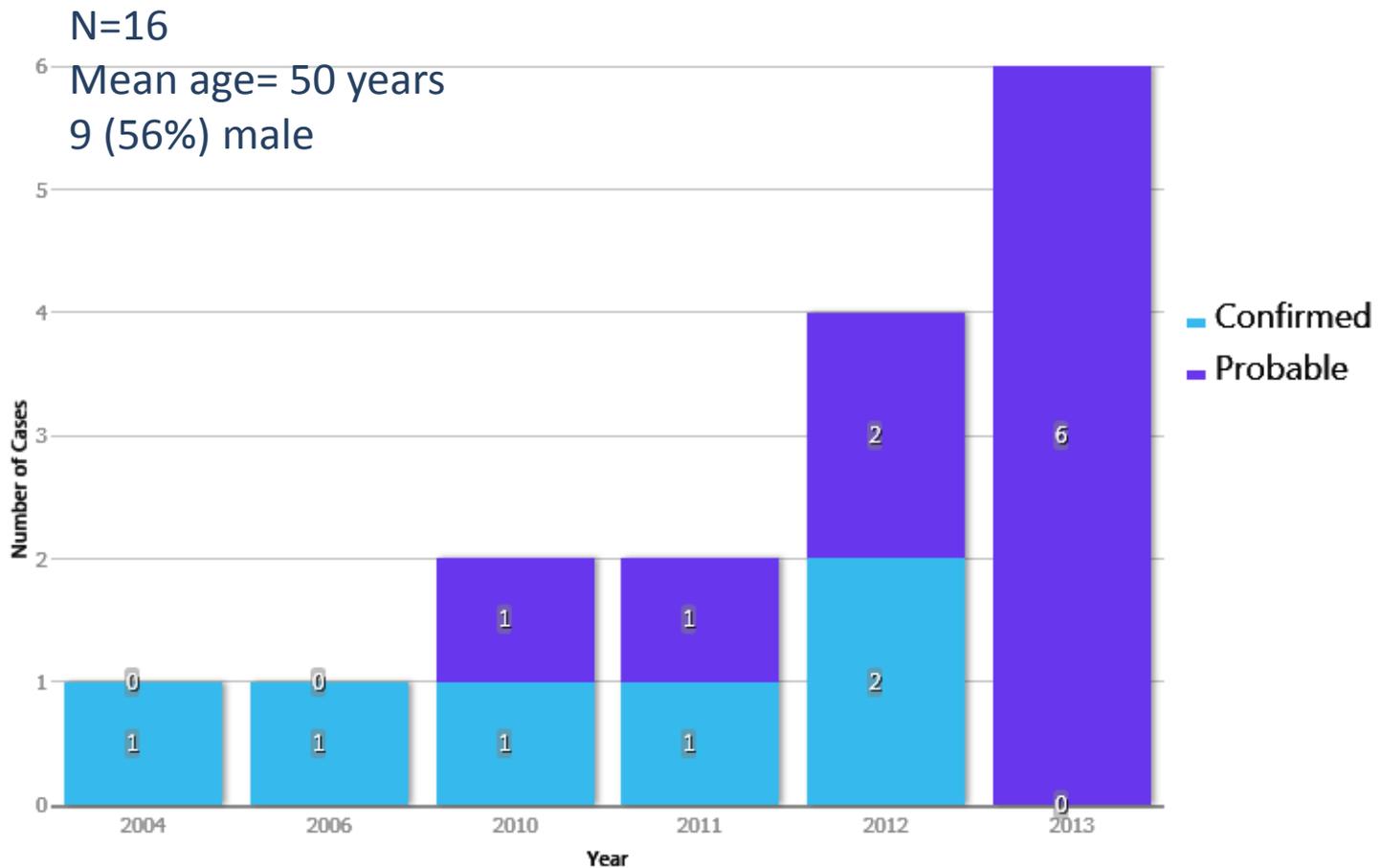
# Historic: *A. phagocytophilum* in *Ixodes pacificus*, California 1995-2005

*A. phagocytophilum* detected in adult *I. pacificus* ticks in 10 of 18 counties surveyed (0.3 - 9.9%)



- Fritz et al, J Vector Ecol. 2005; 30:4-10
- Lane et al, Vector Borne Zoo Dis. 2001;197-210
- Lane et al, J Med Entomol. 2004;41:239-48
- Barlough et al, J. Clin Micro. 35: 2018-2021
- Kramer et al, Am J Trop Med Hyg. 1999; 60: 62-65
- VBDS-CDPH data

# Reported Anaplasmosis cases, California, 2004-2013



## Mammalian Reservoir *Anaplasma phagocytophilum*

---

- Nicholson et al. 1999
  - Rodent study in Sonoma, Placer, Santa Cruz counties
  - Dusky-footed woodrats (*Neotoma fuscipes*)
    - 34% seroreactive
    - Anaplasma DNA detected in 31% of seroreactive woodrats





To learn more about anaplasmosis in California, visit the CDPH website at:

<http://www.cdph.ca.gov/healthinfo/discond/Pages/Anaplasmosis.aspx>



[Click to go table of contents](#)