Current Trends in Vector-Borne Bacterial Zoonoses

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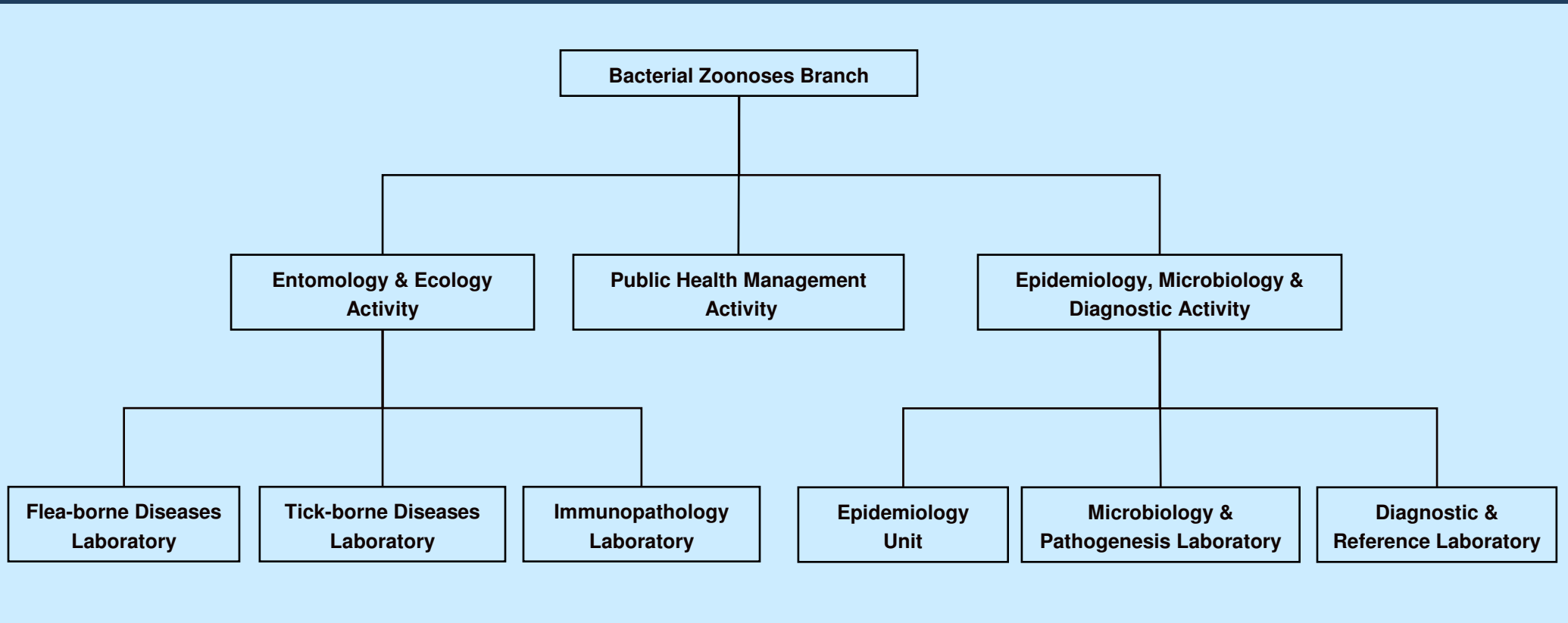
Bacterial Zoonoses Branch, CDC/DVBID

BZB Organizational Chart



CDC

BZB Mission Statement

To promote health and quality of life by preventing and controlling vector-borne bacterial zoonoses

We seek to demonstrate national and international leadership in accomplishing our mission by performing the following key activities:

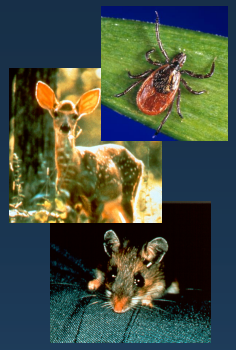
- *Conducting* multidisciplinary public health-oriented research aimed at developing effective disease prevention and control measures
- *Coordinating* nation-wide surveillance
- *Investigating* disease outbreaks in both national and international settings
- *Serving* as a national reference diagnostic laboratory and WHO Collaborating Centers
- *Providing* science-based guidance and recommendations for prevention and control of both natural and potential terrorism-related outbreaks
- *Training* students, fellows, and public health practitioners for the purpose of diagnosing, preventing, and investigating vector-borne diseases
- *Collaborating* with universities, industry, and public health partners in promoting sound disease prevention policies and practices

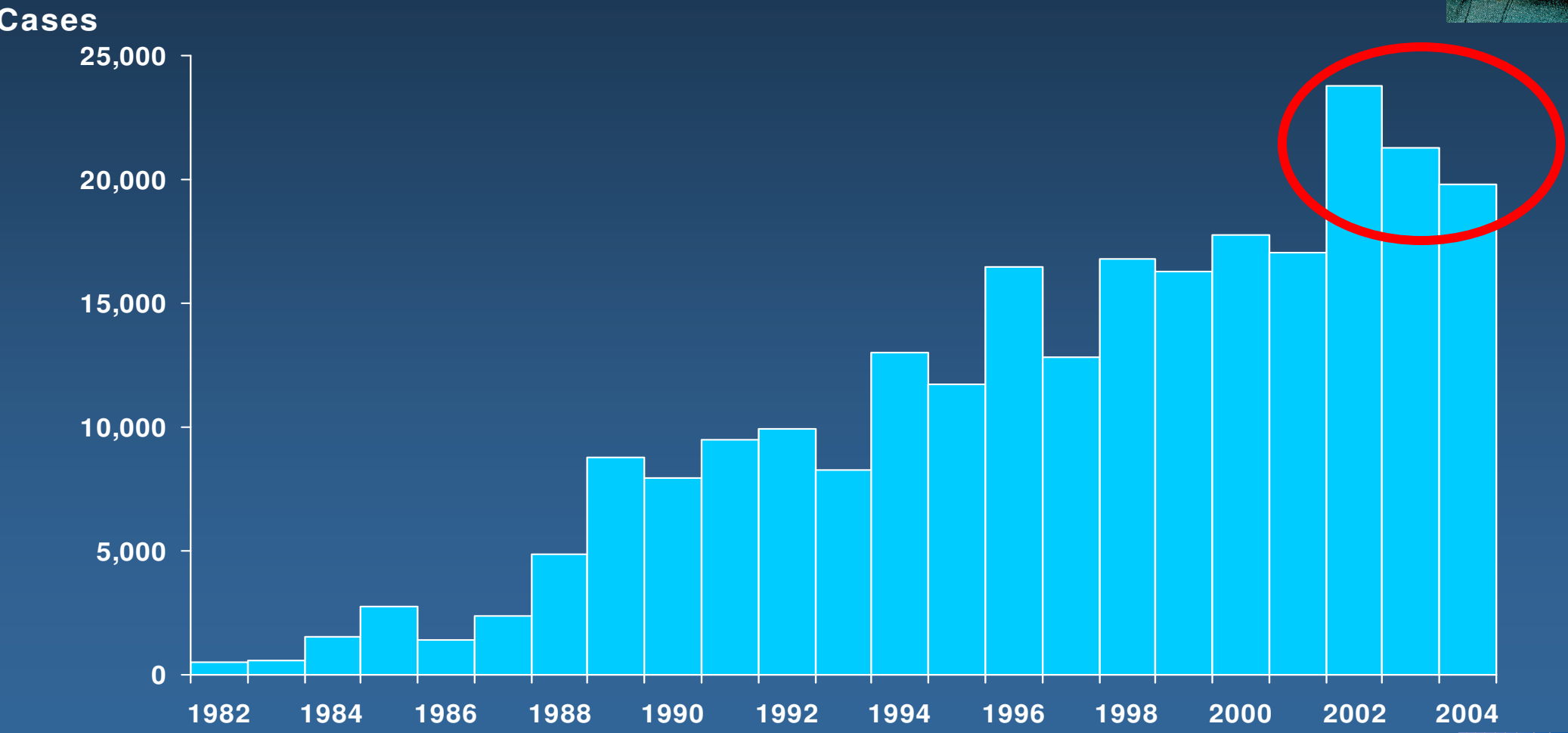
CDC

BZB Diseases

- Lyme Disease
- Plague
- Tularemia
- STARI
- Tick-borne relapsing fever
- Bartonellosis

Reported Cases of Lyme Disease by Year - United States, 1982-2004





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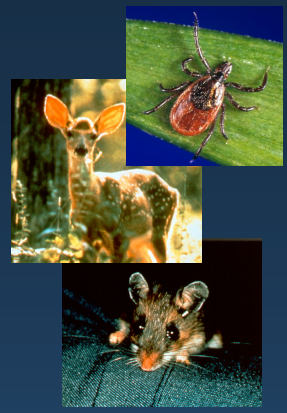
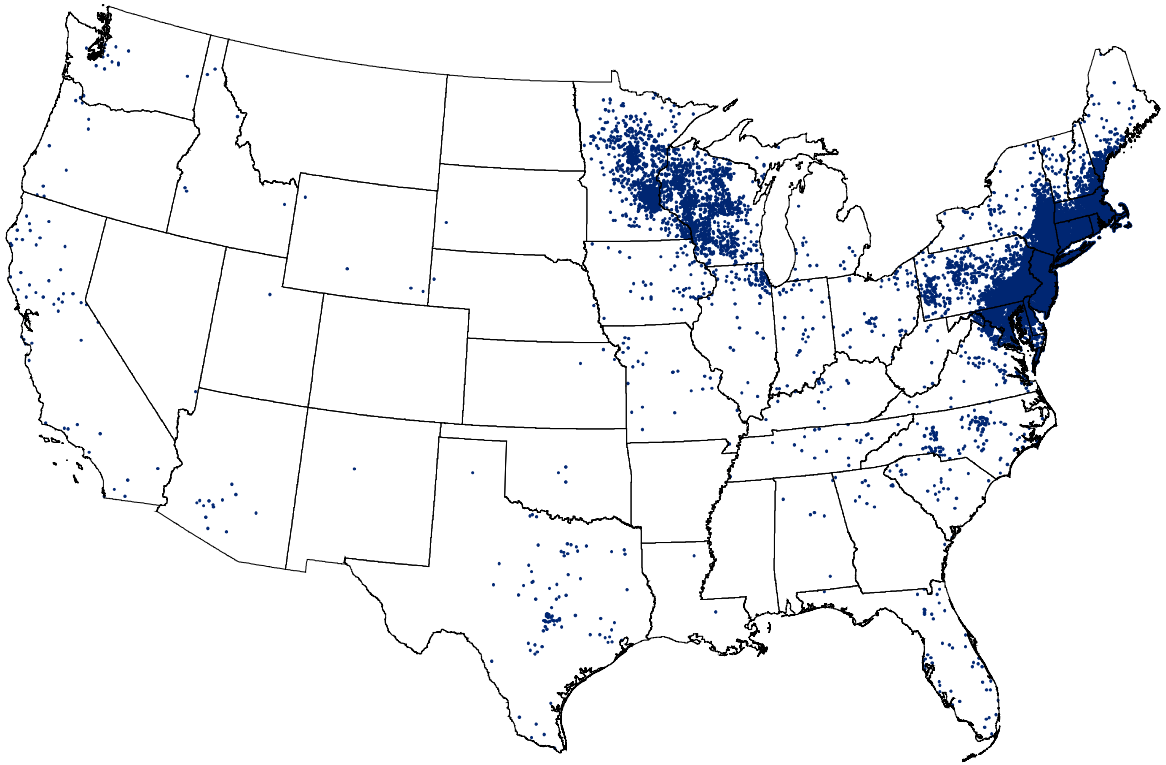
Current Lyme Disease Situation



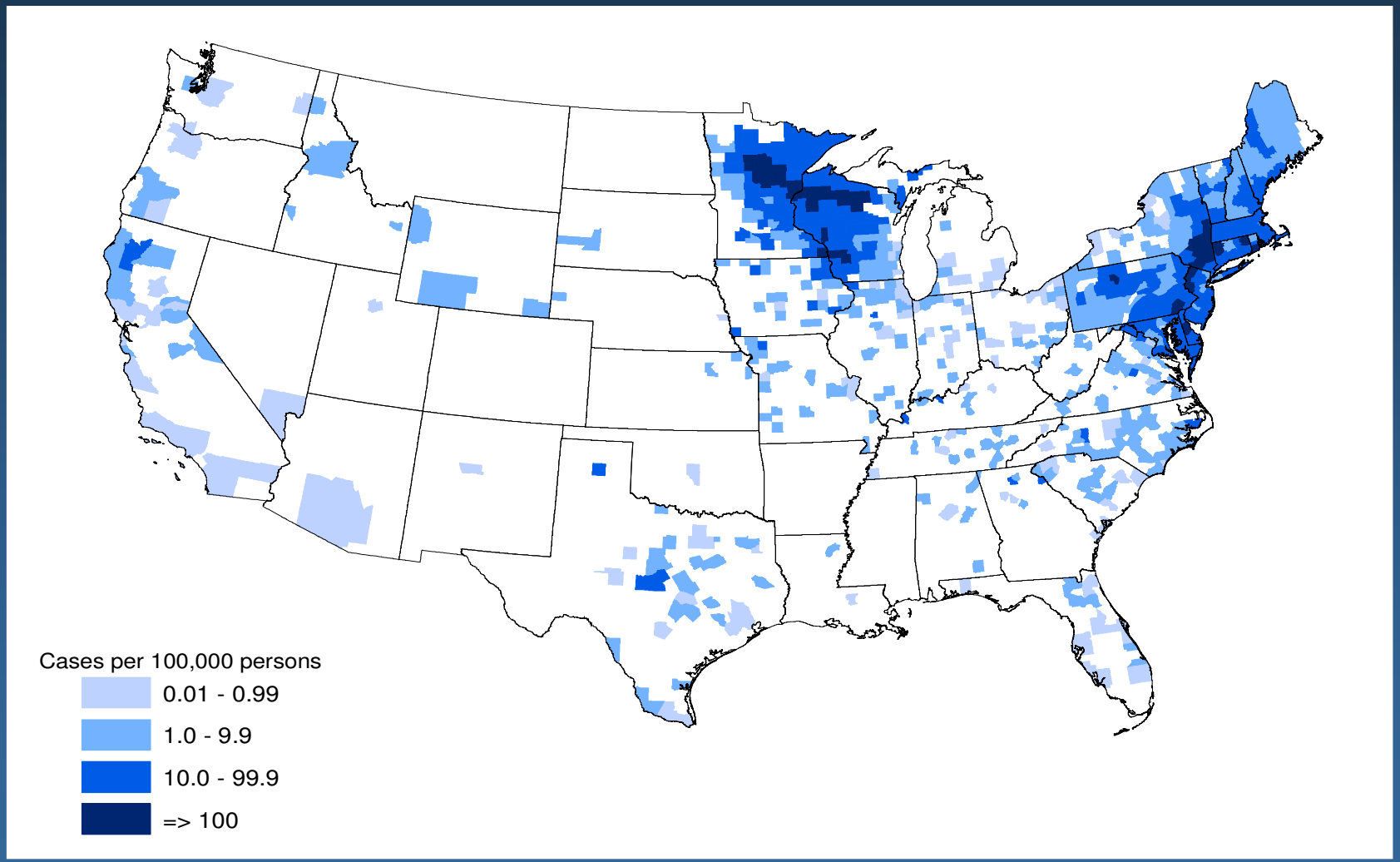
Reported Cases of Lyme Disease -- United States, 2004



1 dot placed randomly within county of residence for each reported case

CDC

Lyme Disease Incidence by County of Residence (2004)



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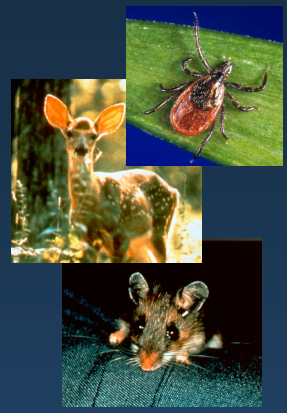
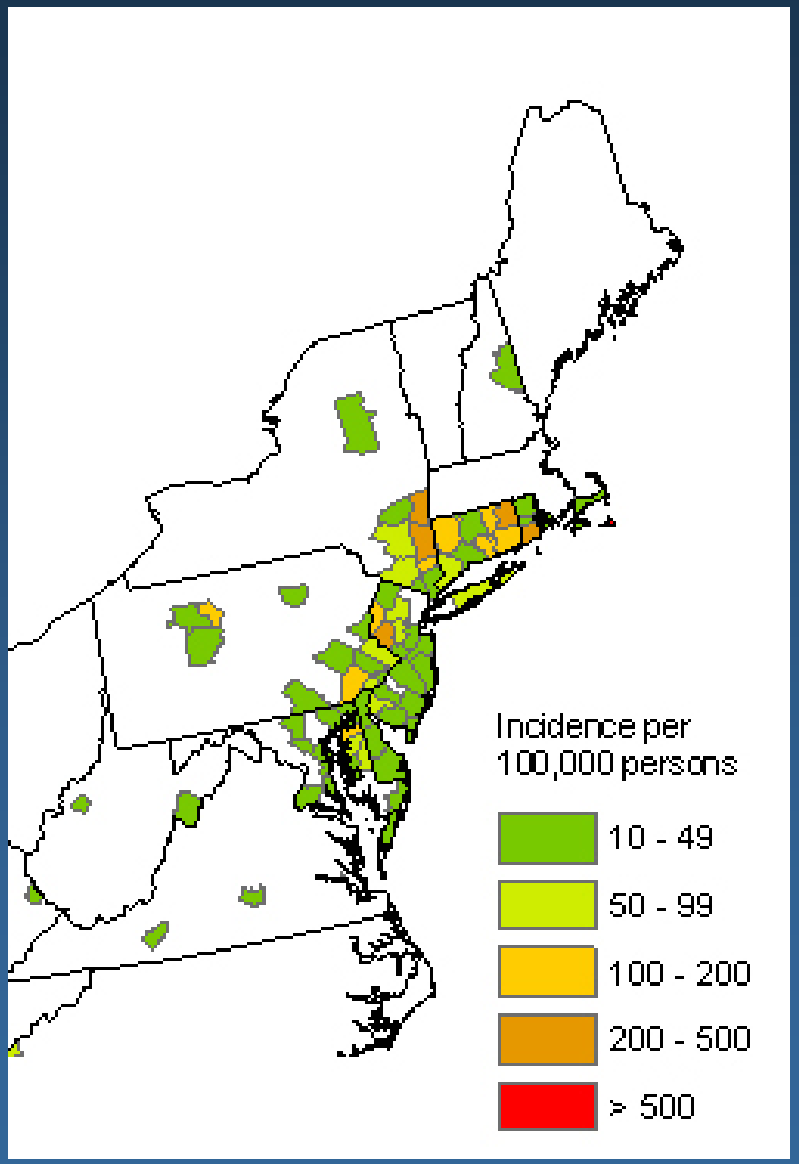
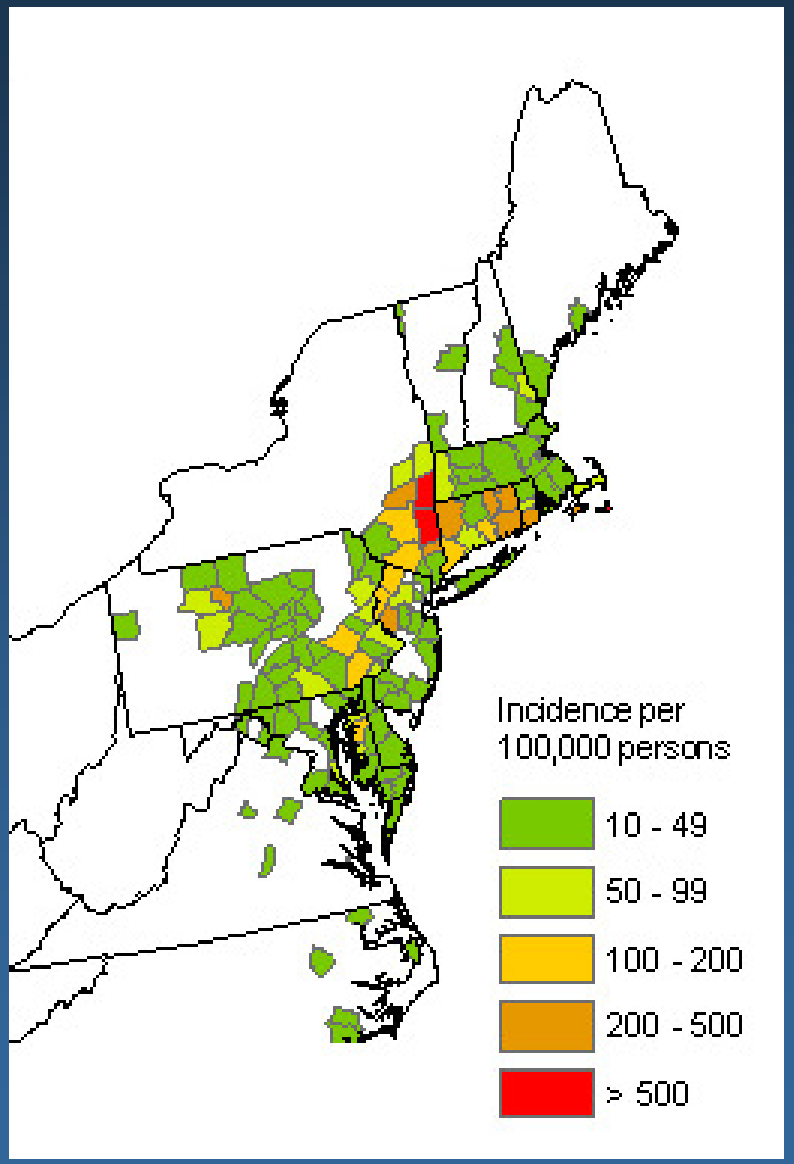
Lyme Disease Emergence: 1997-2002







CDC

Lyme Disease Emergence

Cook County
Department of Public Health
Cook County Bureau of Health Services

NEWS RELEASE

FOR IMMEDIATE RELEASE
January 23, 2006

Media contact: Kitty Loewy, 708-492-2015
pager: 708-643-9432
www.cookcountypublichealth.org

Deer Ticks Positive for Lyme Disease Found in Southwest Suburban Cook County

Lyme Disease Tools for Prevention and Control

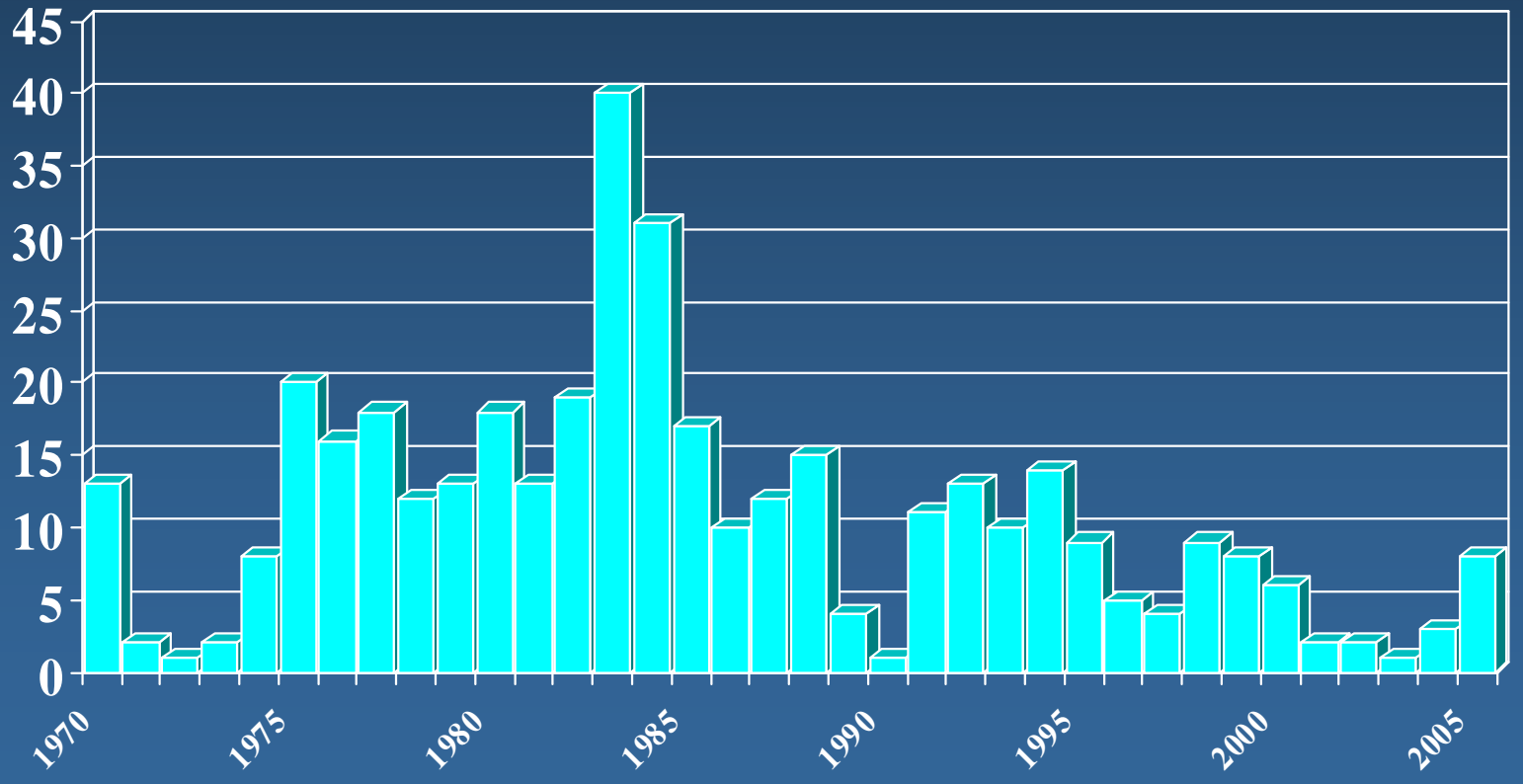
Tool:	Target:	CDC Activity*:			
		Develop:	Fund:	Evaluate:	Recommend:
Bait boxes	Tick			X	X
Acaricides	Tick	X		X	X
Environmental control	Tick				X
Repellants	Tick	X		X	X
Reservoir targeted vaccine	Tick or spirochete	X	X	X	X
Human vaccine	Spirochete			X	X
Behavior modification	Tick			X	X
PE prophylaxis	Spirochete	X		X	X
Treatment	Spirochete				X
Deer removal	Host				X
Rodent removal	Host				X
4 Posters	Tick		X	X	X

*Past, current, or potential future involvement as described

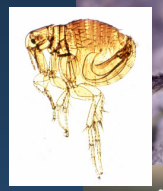
Lyme Disease Long-term Program Goals (BHAGS):

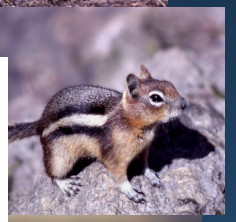
- Refine surveillance system for accuracy sustainability
- Reduce Lyme disease cases and distribution (by how much and by when??)
- Develop a positive and effective relationship with patient-advocacy groups

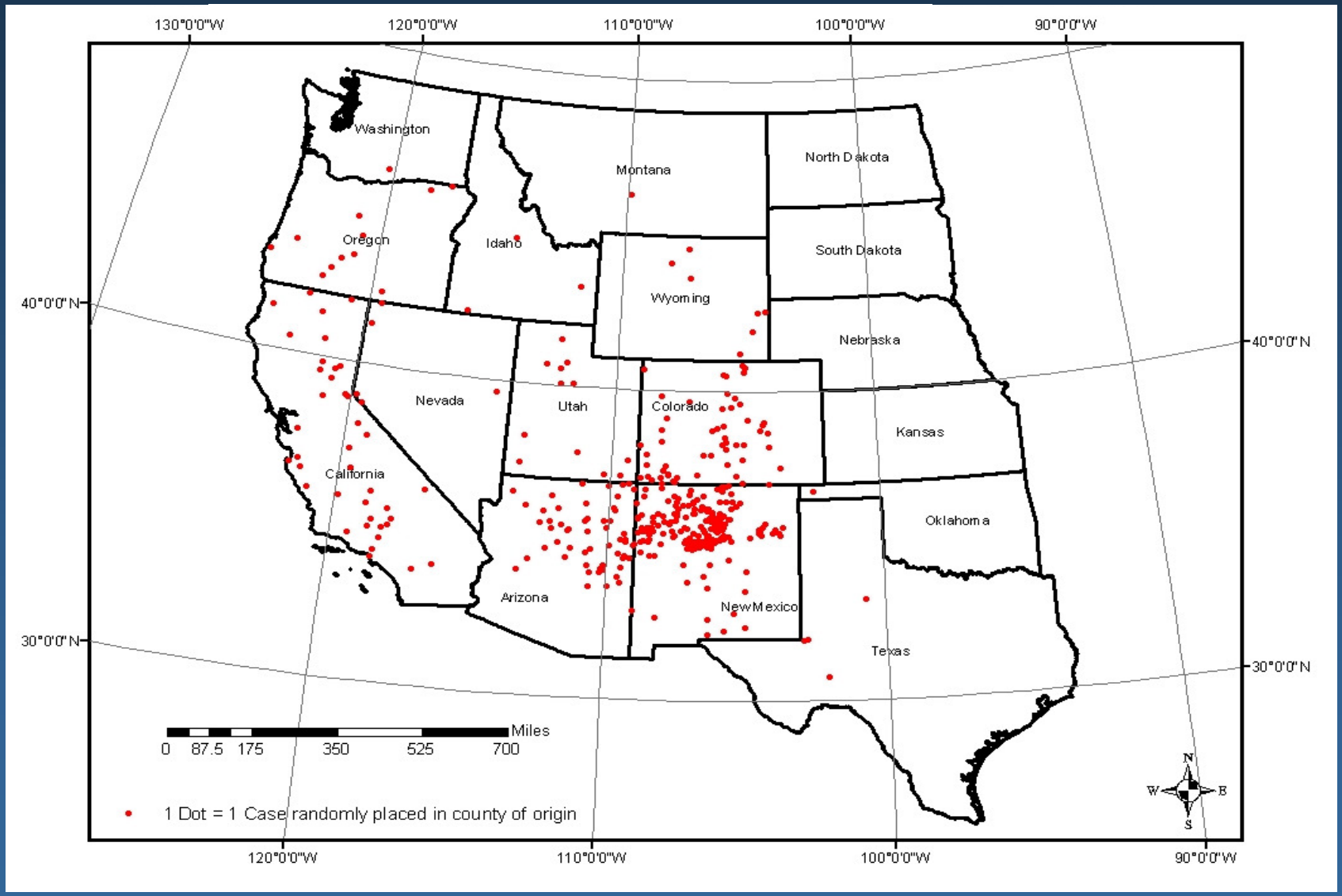
Reported Human Plague Cases
By Year-U.S.A., 1970 – 2005 (n=390)



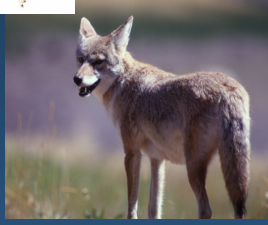
Human Plague Cases: 1970 – 2005

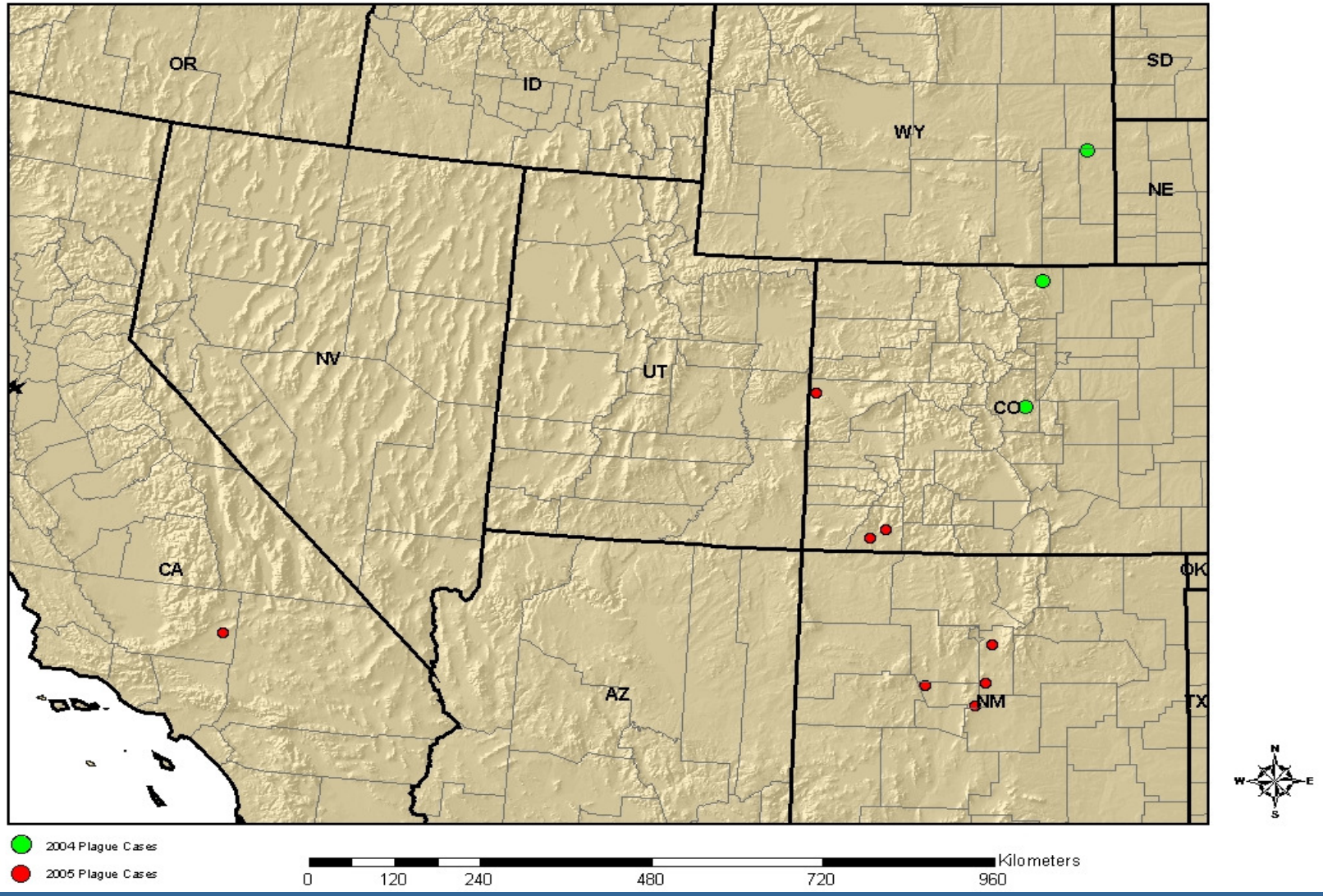






Human Plague Cases: 2004-2005





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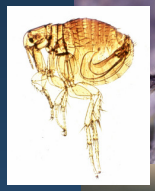
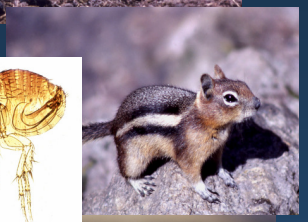
Plague Activity – Colorado (2006)

- 2 positive chipmunks
- 1 (possibly 2) positive domestic cat(s)



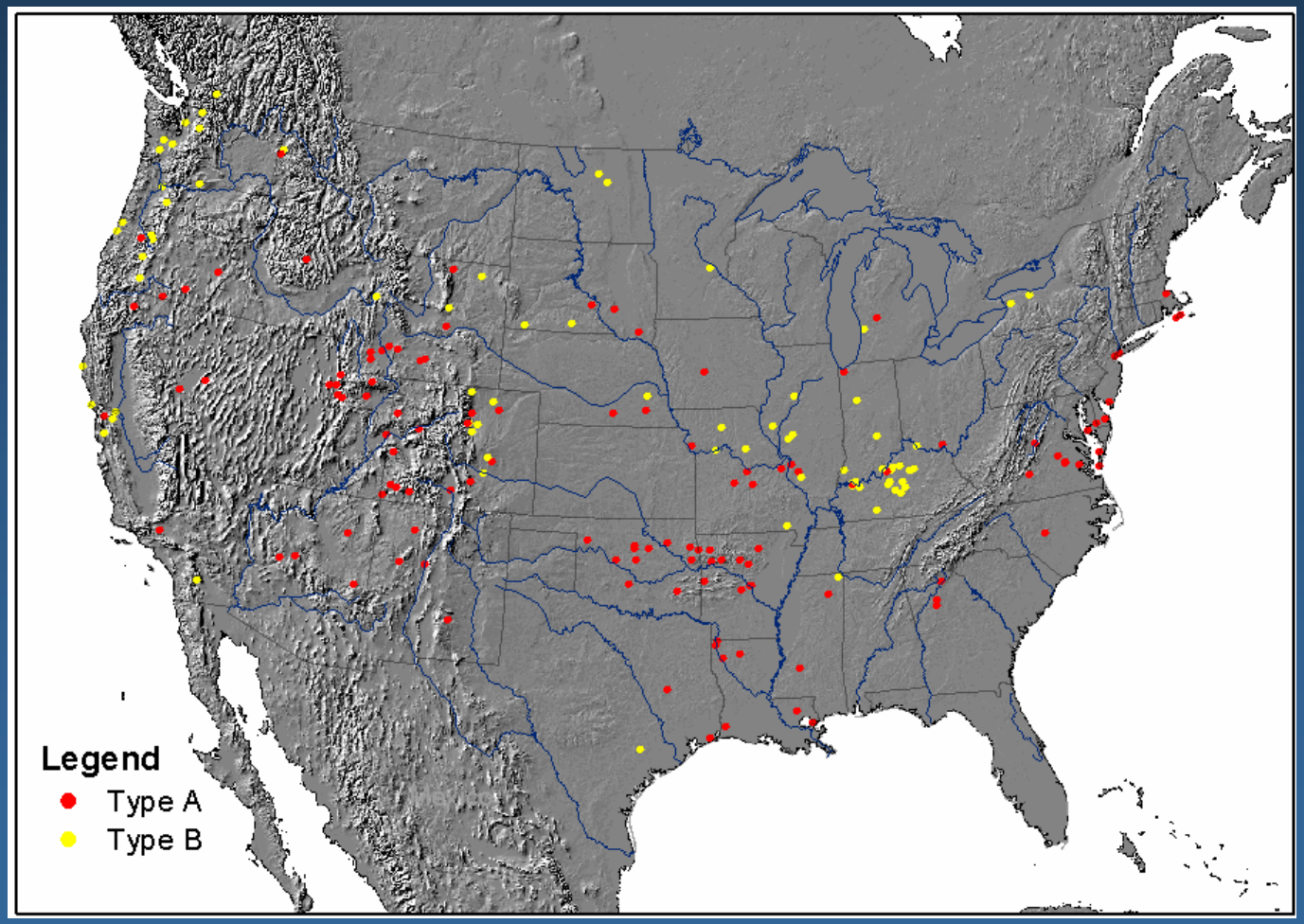


Colorado National Monument - Saddlehorn Rock (John Pape, Colorado DOPHE)

Plague Program Goals and Activities

- Improve/evaluate plague diagnostics (rapid assays for international and/or BT-related cases)
- Evaluate drugs in the Strategic National Stockpile through clinical trials in Sub-Saharan Africa
- Understand natural ecology of plague and causes for seasonal epizootic fluctuations
- Develop/employ molecular tools and systems for subtyping and outbreak investigation

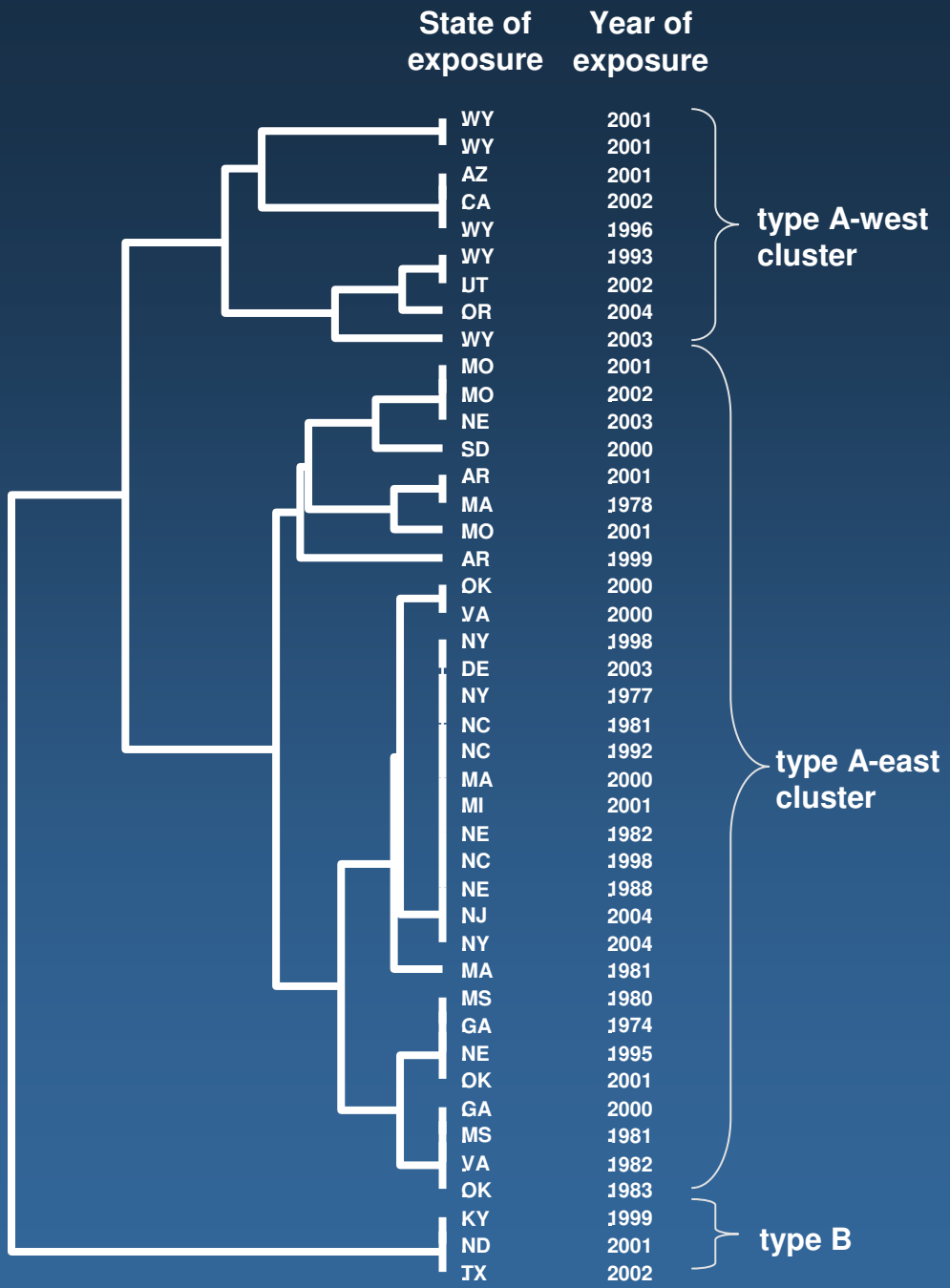
Geographic distribution of *F. tularensis* type A and type B isolates from humans, 1964-2004



- Average of 124 cases per year
- Four states account for 56% of all reported cases (OK, AR, MO, SD)

CDC

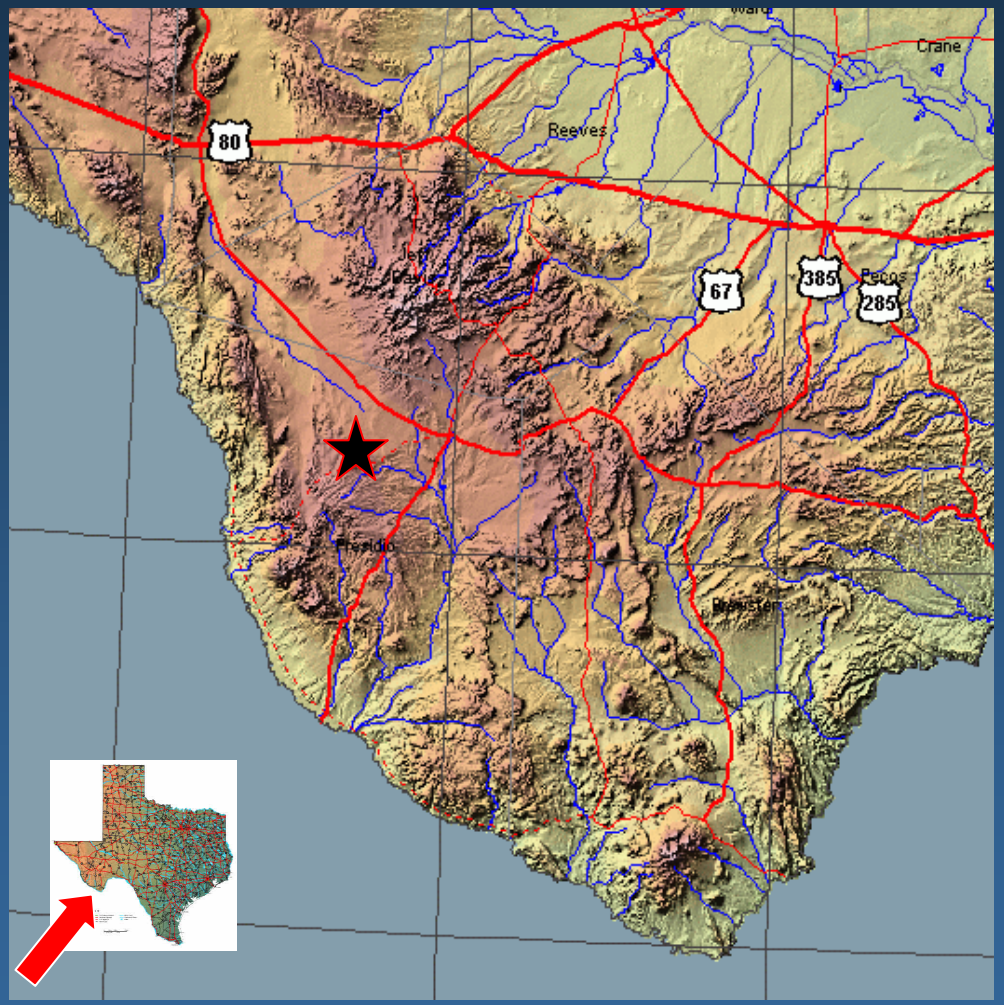
PFGE Subtyping of *F. tularensis* type A isolates



PFGE Subtyping of *F. tularensis* type A isolates

	All Type B Number (%)	Type A East Number (%)	Type A West Number (%)	All Type A Number (%)
Median Patient Age	50 years	44 years	33 years	38 years
Fatality rate	(7)	(14)	(0)	(9)
Blood	24 (24)	43 (36)	3 (5)	46 (25)
CSF	0 (0)	4 (3)	3 (5)	46 (25)
Eye	5 (5)	1 (1)	1 (2)	2 (1.1)
Lung	12 (12)	14 (12)	3 (5)	18 (10)
Node	58 (59)	56 (48)	53 (87)	109 (60)

Tularemia Activity – Texas (2006)



- Widespread die-off in Presidio County area
- Positives reported in cottontails, jackrabbits, cotton rats, and foxes
- One suspect human case

Presidio County, TX (Kathy Parker, Texas Department of State Health Services)

Tularemia Program Goals and Activities

- Improve tularemia diagnostics (*F. tularensis* subspecies and environmental “look-a-likes”)
- Develop/employ molecular tools and systems for subtyping and outbreak investigation
- Understand natural ecology and transmission of *F. tularensis* and relevance to BT-related issues

Conclusion

- We look forward to working with you
- We are here to assist you anyway we can