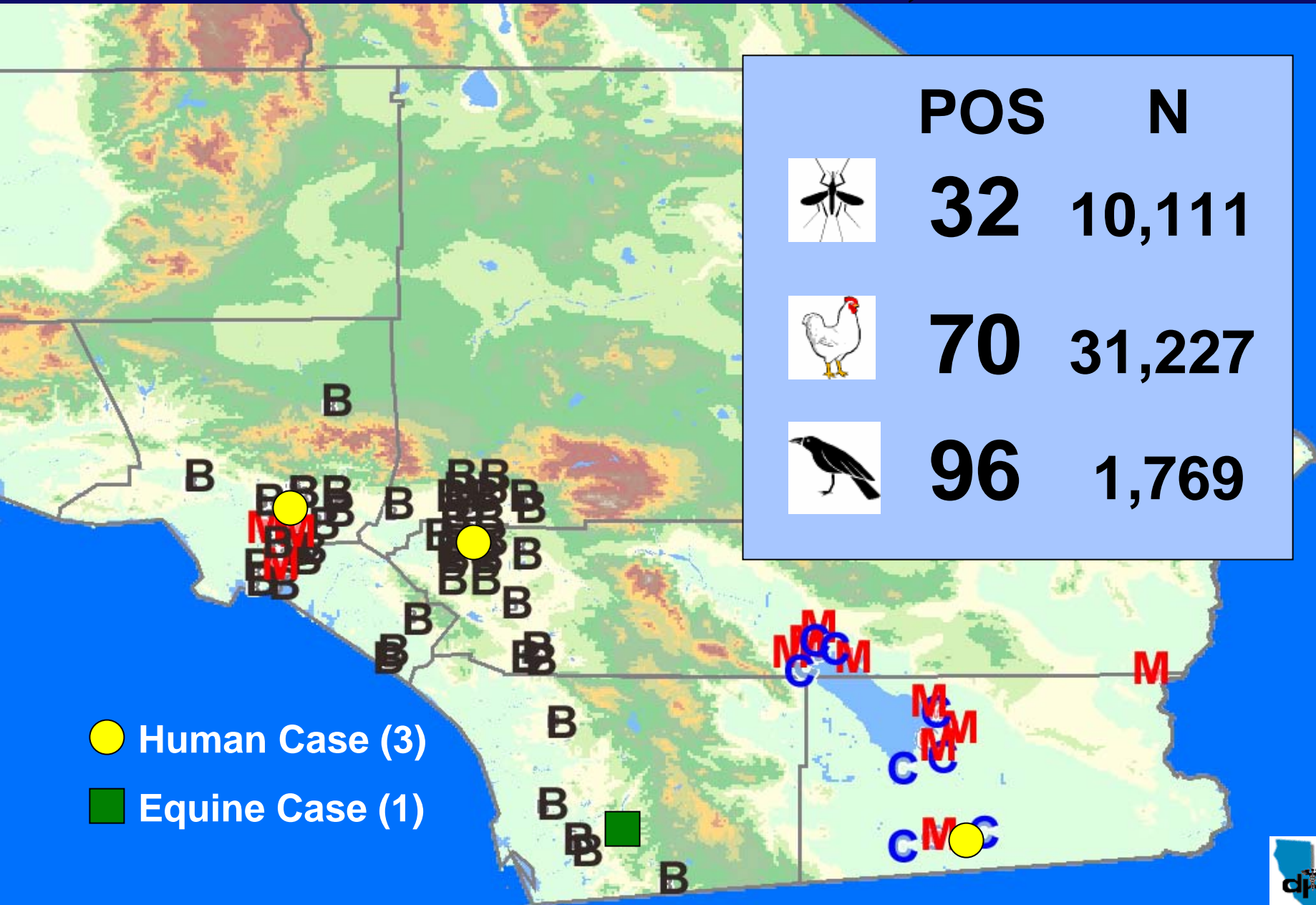


West Nile Virus Activity in California 2005

**Division of Communicable Disease Control
California Department of Health Services**

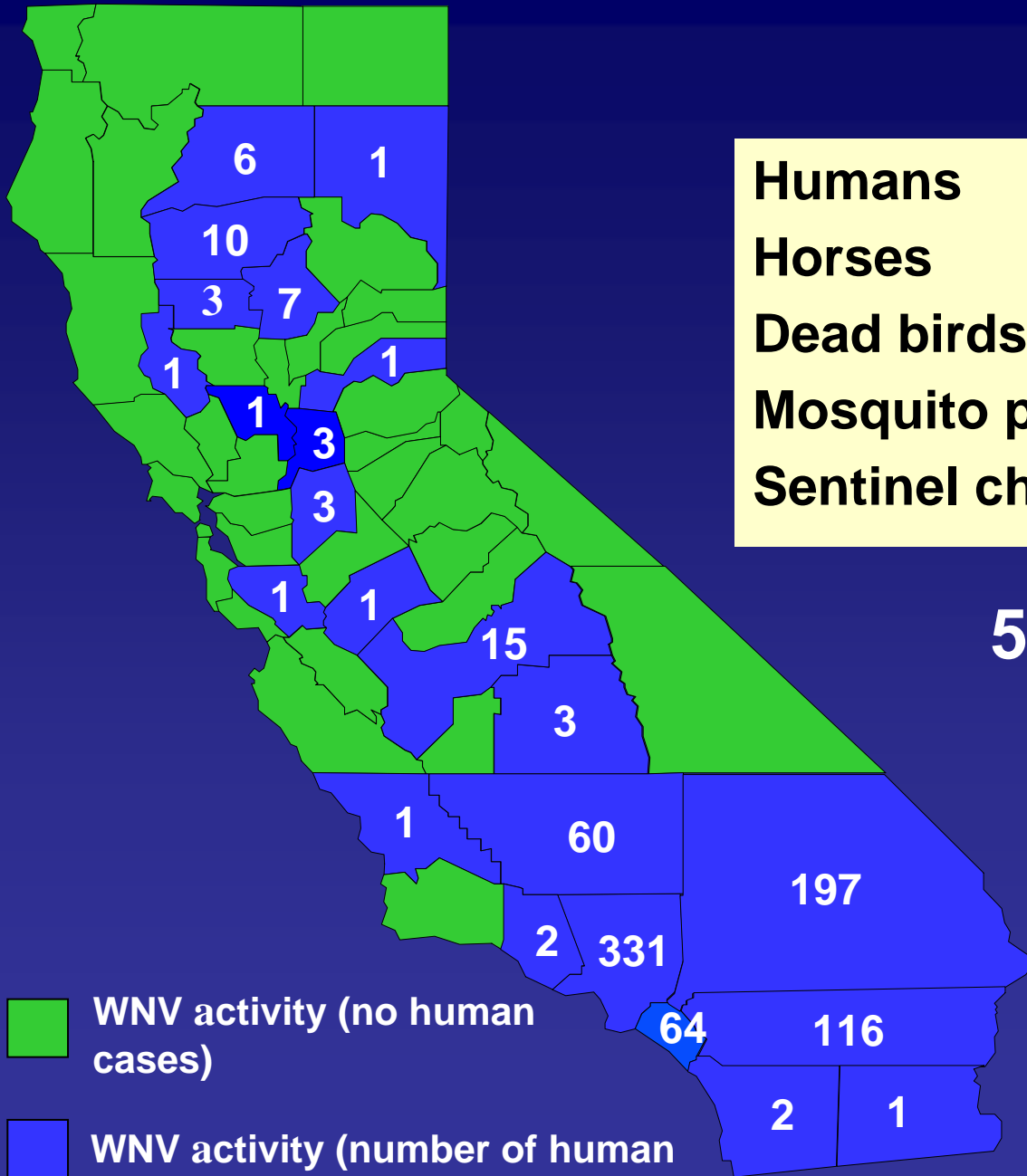
WNV in California, 2003





2004

Humans	830 / 28
Horses	540 / 230
Dead birds	3232
Mosquito pools	1136
Sentinel chickens	805

58 counties

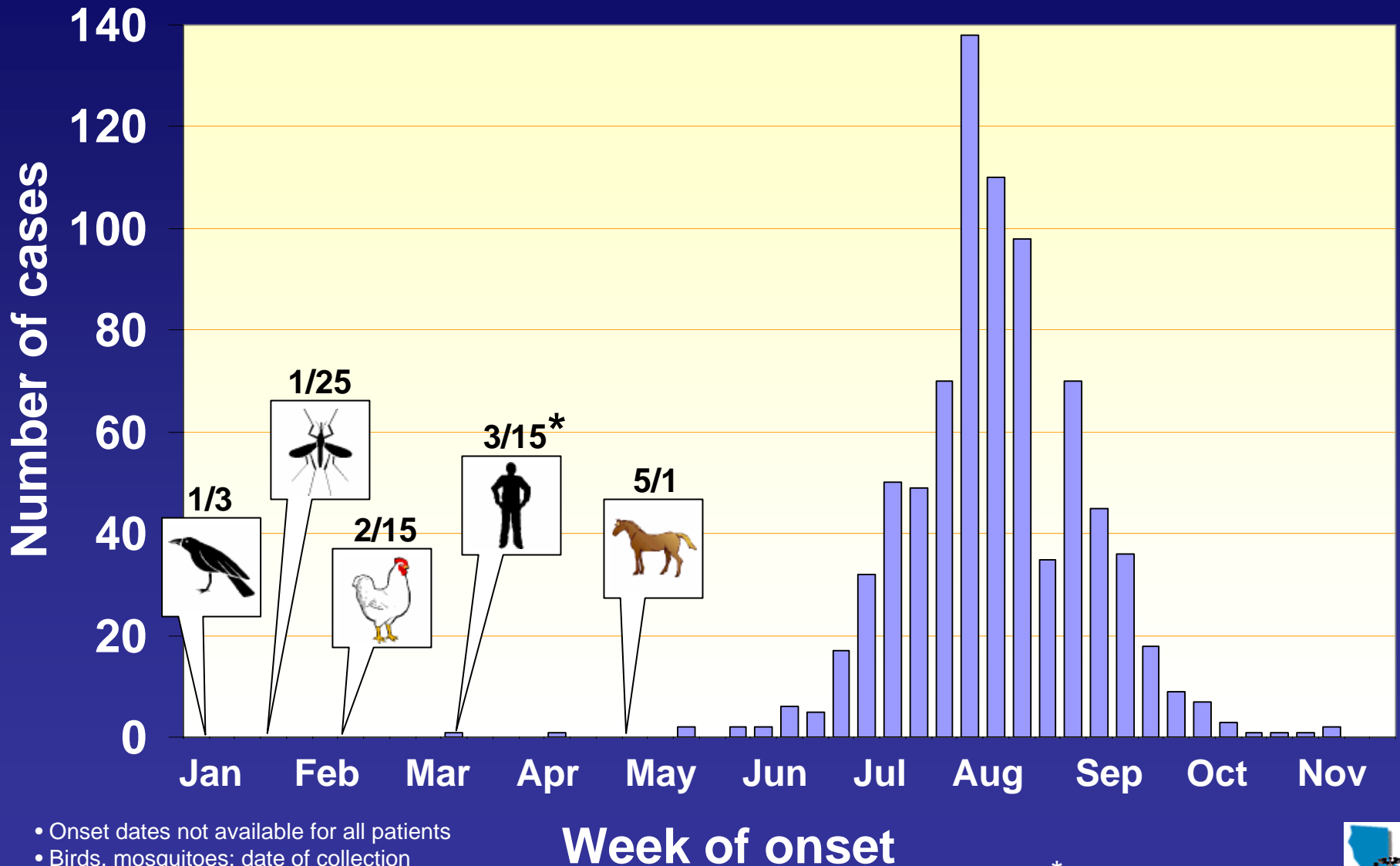


 WNV activity (no human cases)

 WNV activity (number of human infections)



Sequence of WNV detection events in California relative to human case onset, 2005



- Onset dates not available for all patients
- Birds, mosquitoes: date of collection
- Chickens: date of probable seroconversion

* Estimated date of onset



April 2005

Humans, onset / reported 2 / 0

Horses, onset / reported 0


Dead birds 63

Mosquito pools 1

Sentinel chickens 1

**N = 2 counties with
human infection**

 WNV activity (no human cases)

 WNV activity (number of human cases with known onset date)



May 2005

Humans, onset / reported 4 / 0

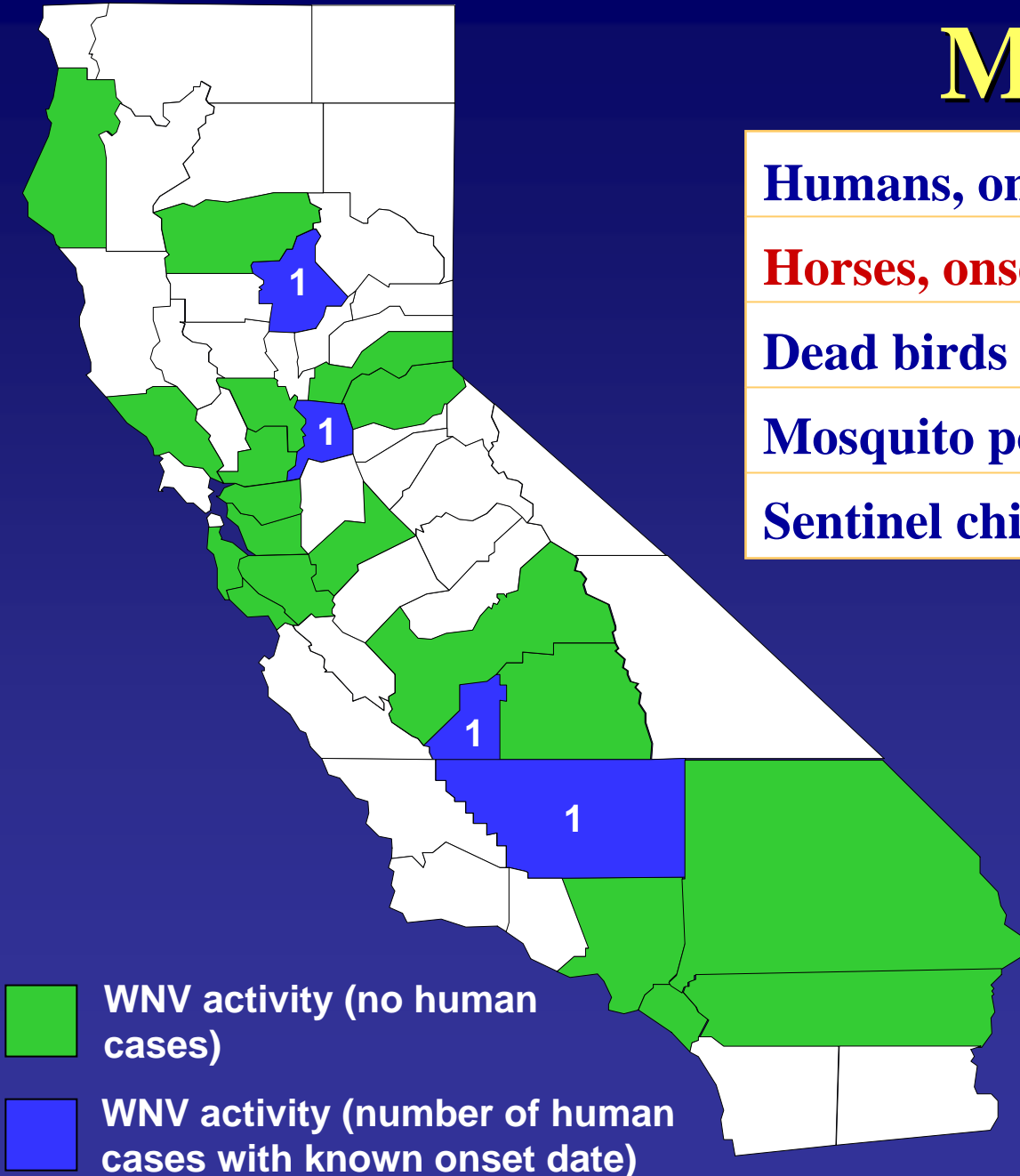
Horses, onset / reported 1 / 1

Dead birds 101

Mosquito pools 6

Sentinel chickens 3

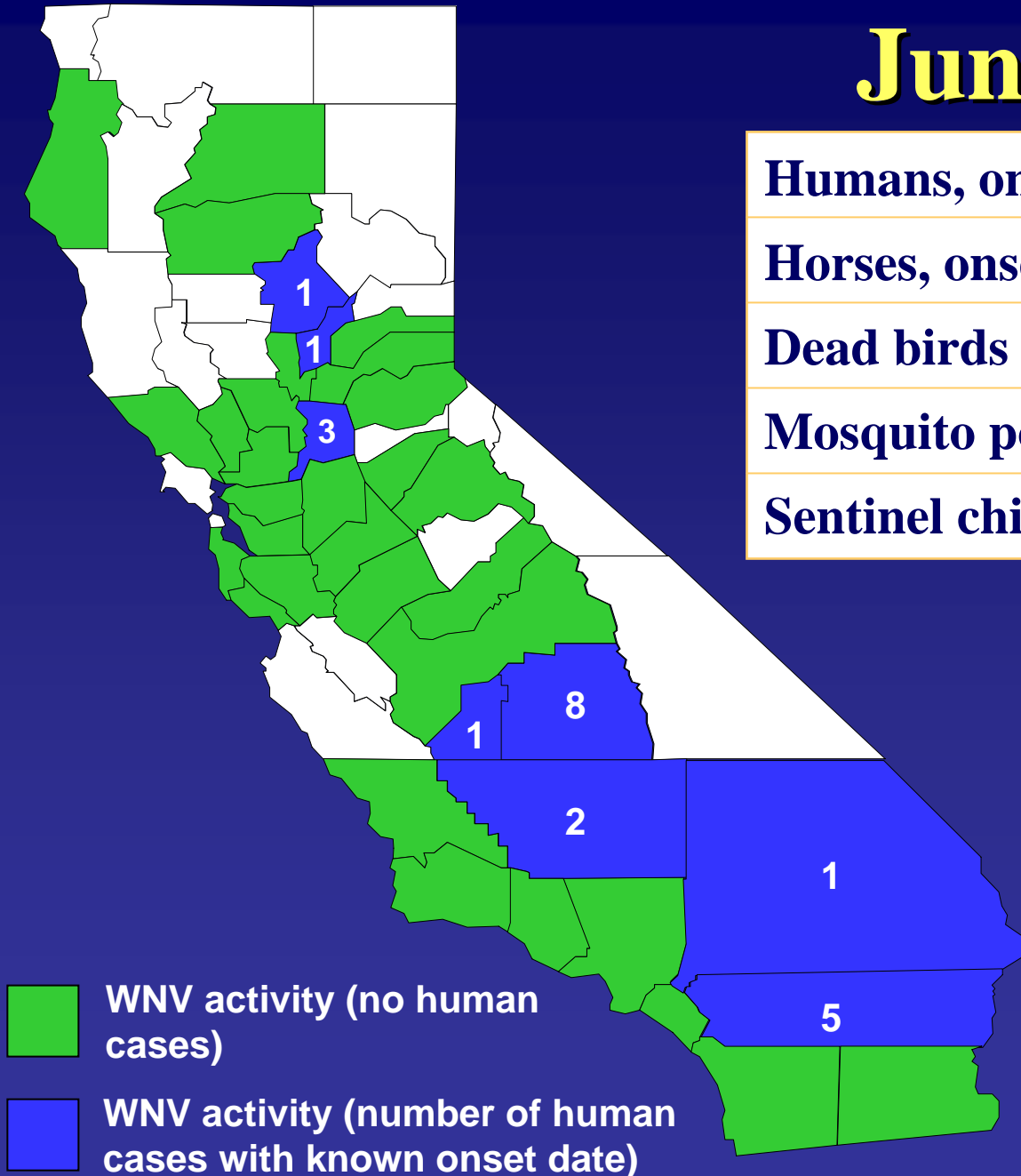
N = 4 counties with human infection



June 30, 2005

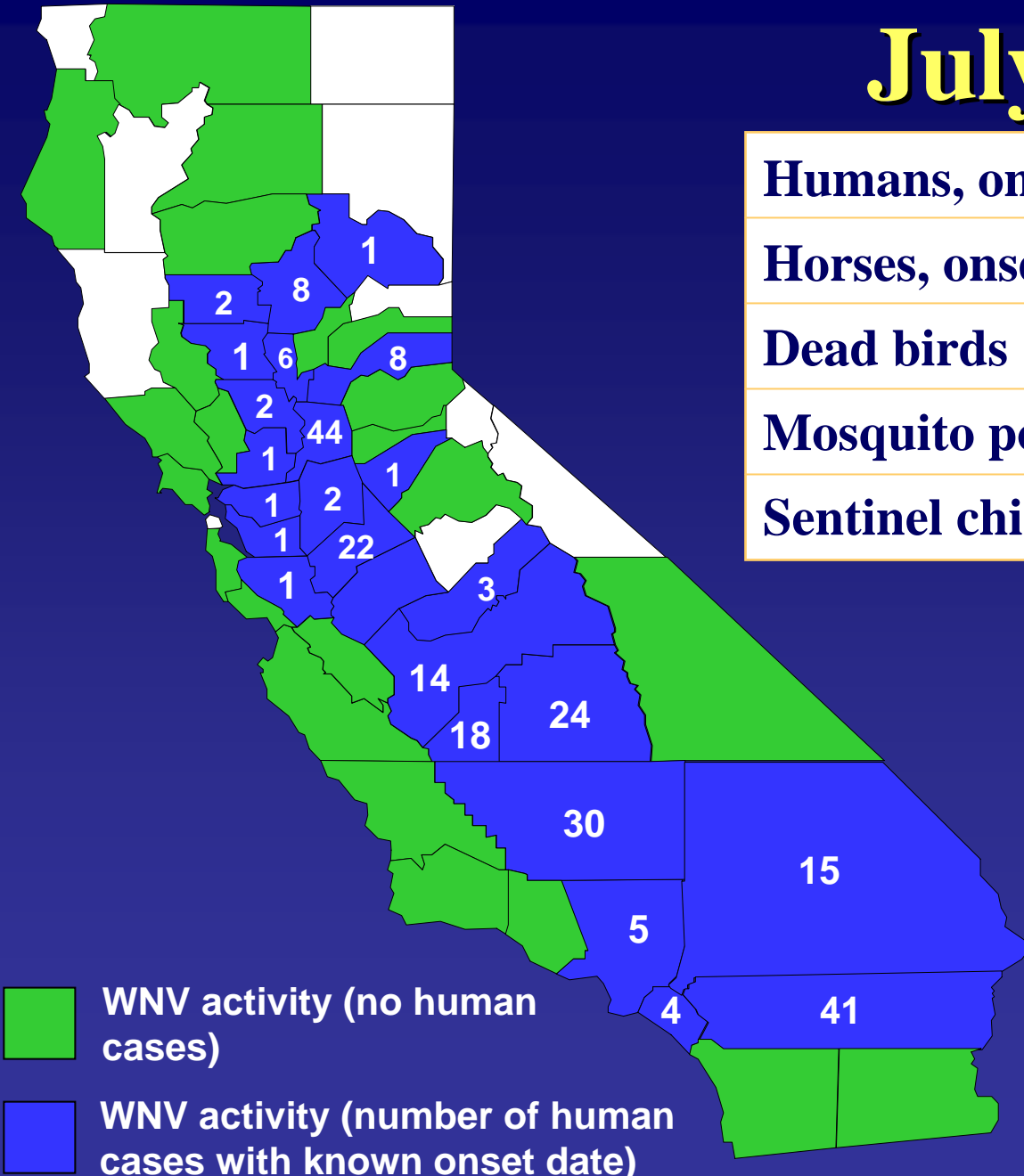
Humans, onset / reported	22 / 2
Horses, onset / reported	8 / 3
Dead birds	437
Mosquito pools	137
Sentinel chickens	14

N = 8 counties with human infection



July 31, 2005

Humans, onset / reported	254 / 56
Horses, onset / reported	116 / 48
Dead birds	1,216
Mosquito pools	588
Sentinel chickens	179



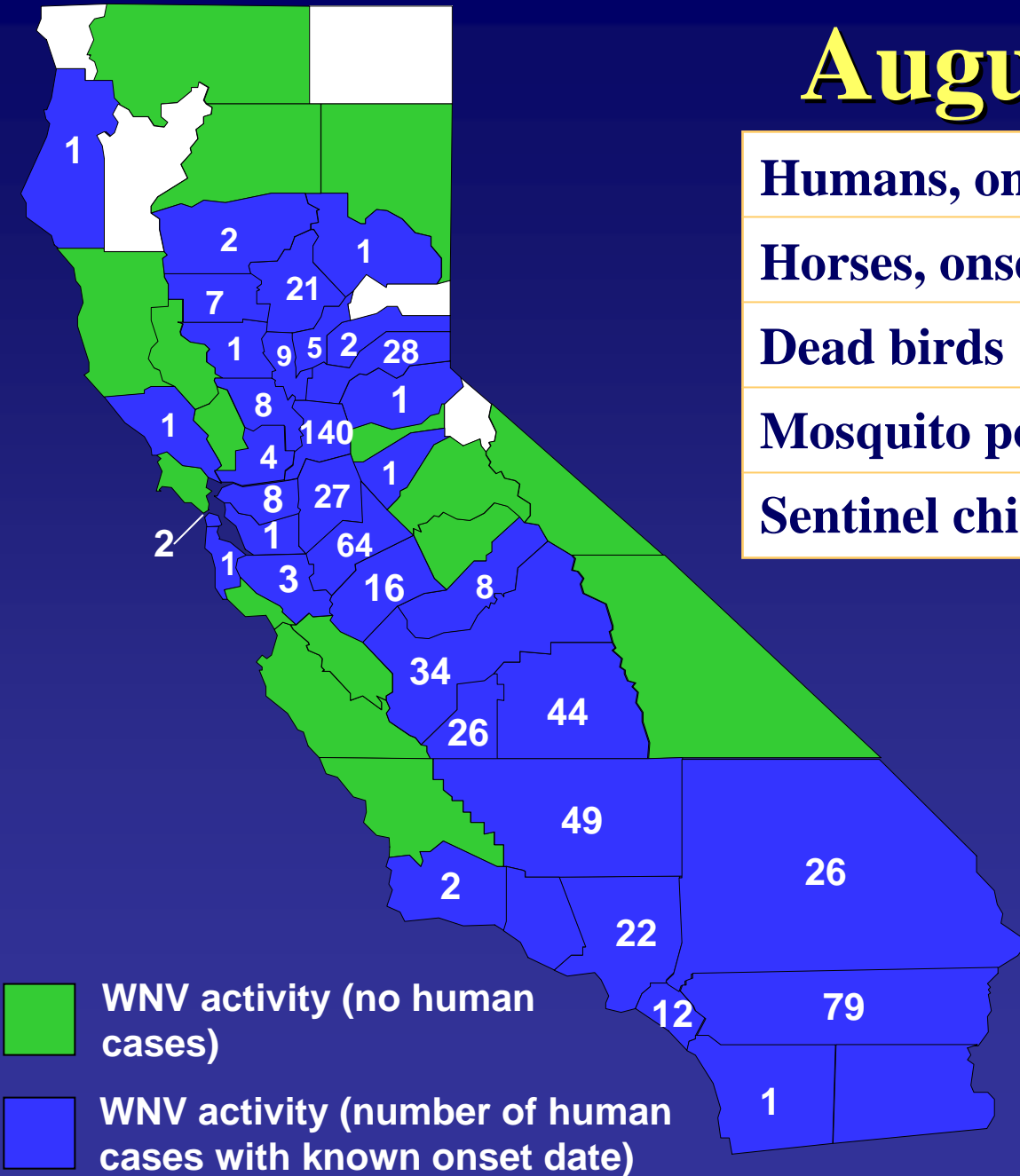
N = 24 counties with human infection

Green WNV activity (no human cases)
Blue WNV activity (number of human cases with known onset date)



August 31, 2005

Humans, onset / reported	656 / 416
Horses, onset / reported	343 / 277
Dead birds	2,306
Mosquito pools	1,040
Sentinel chickens	557

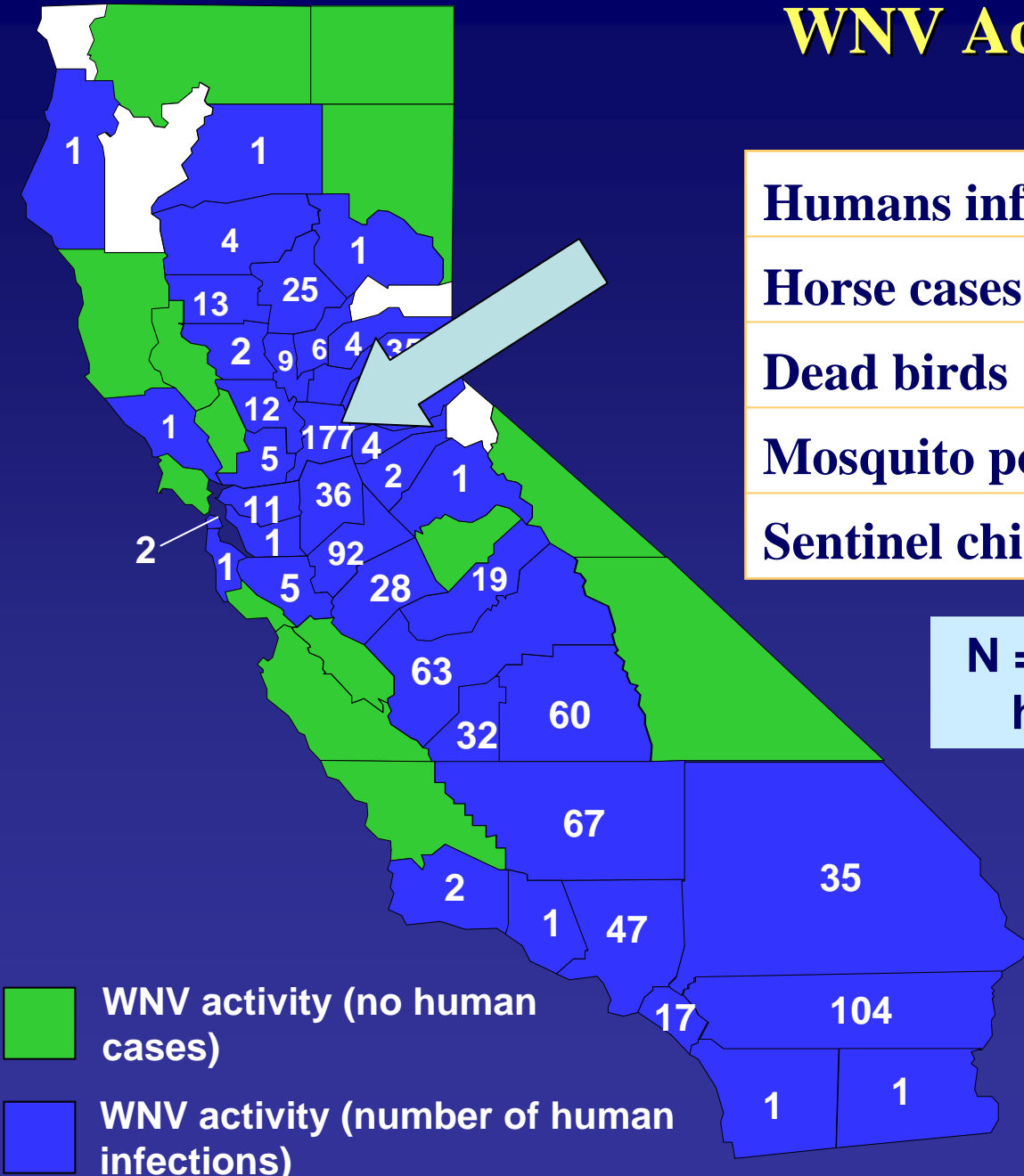


N = 37 counties with human infection



WNV Activity in California 2005

Humans infections	929
Horse cases	456
Dead birds	3,046
Mosquito pools	1,242
Sentinel chickens	790



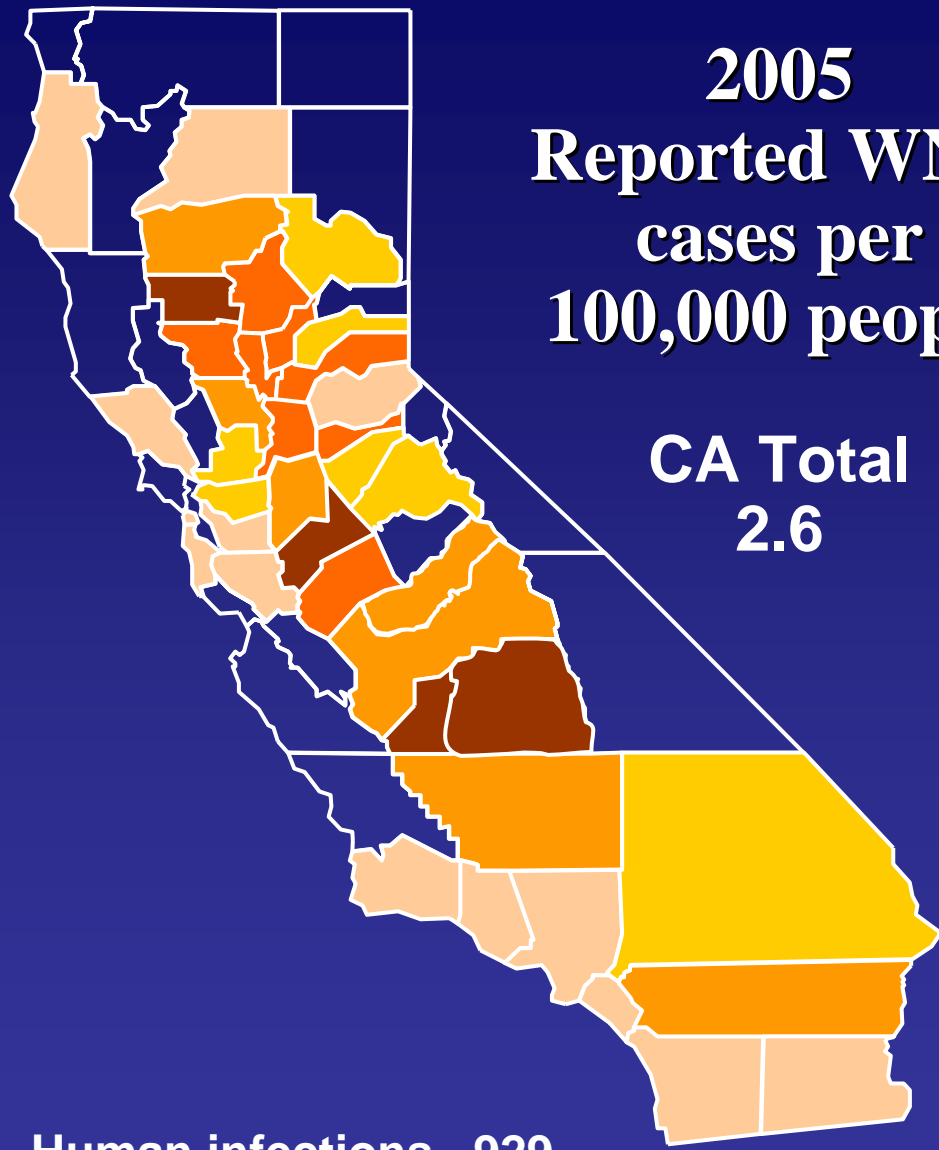
N = 40 counties with human infection

■ WNV activity (no human cases)
■ WNV activity (number of human infections)



2005 Reported WNV cases per 100,000 people

CA Total
2.6



Human infections 929

Glenn	49.1	
Kings	24.7	
Stanislaus	19.6	≥ 15
Tulare	15.2	

Sacramento	14.2	
Placer	14.0	
Merced	13.3	
Butte	11.8	≥ 10
Sutter	11.4	
Amador	11.4	
Colusa	10.6	
Yuba	10.0	

Madera	9.8	
Kern	9.5	
Fresno	7.6	
Yolo	7.1	≥ 5
San Joaquin	6.4	
Riverside	6.4	
Tehama	7.1	

Calaveras	4.9	
Plumas	4.8	
Nevada	4.3	
San Bernardino	1.9	≥ 1
Tuolumne	1.8	
Solano	1.3	
Contra Costa	1.2	

Others	> 0	
--------	-----	--



Top Ten Counties with Human WNV Infections

2004

Los Angeles	323
San Bernardino	191
Riverside	112
Orange	64
Kern	60
Fresno	15
Tehama	10
Butte	7
Shasta	6
Glenn	3

2005

Sacramento	177
Riverside	104
Stanislaus	92
Kern	67
Fresno	63
Tulare	60
Los Angeles	47
San Joaquin	36
Placer	35
San Bernardino	35



Human WNV Infections

2004 - 2005

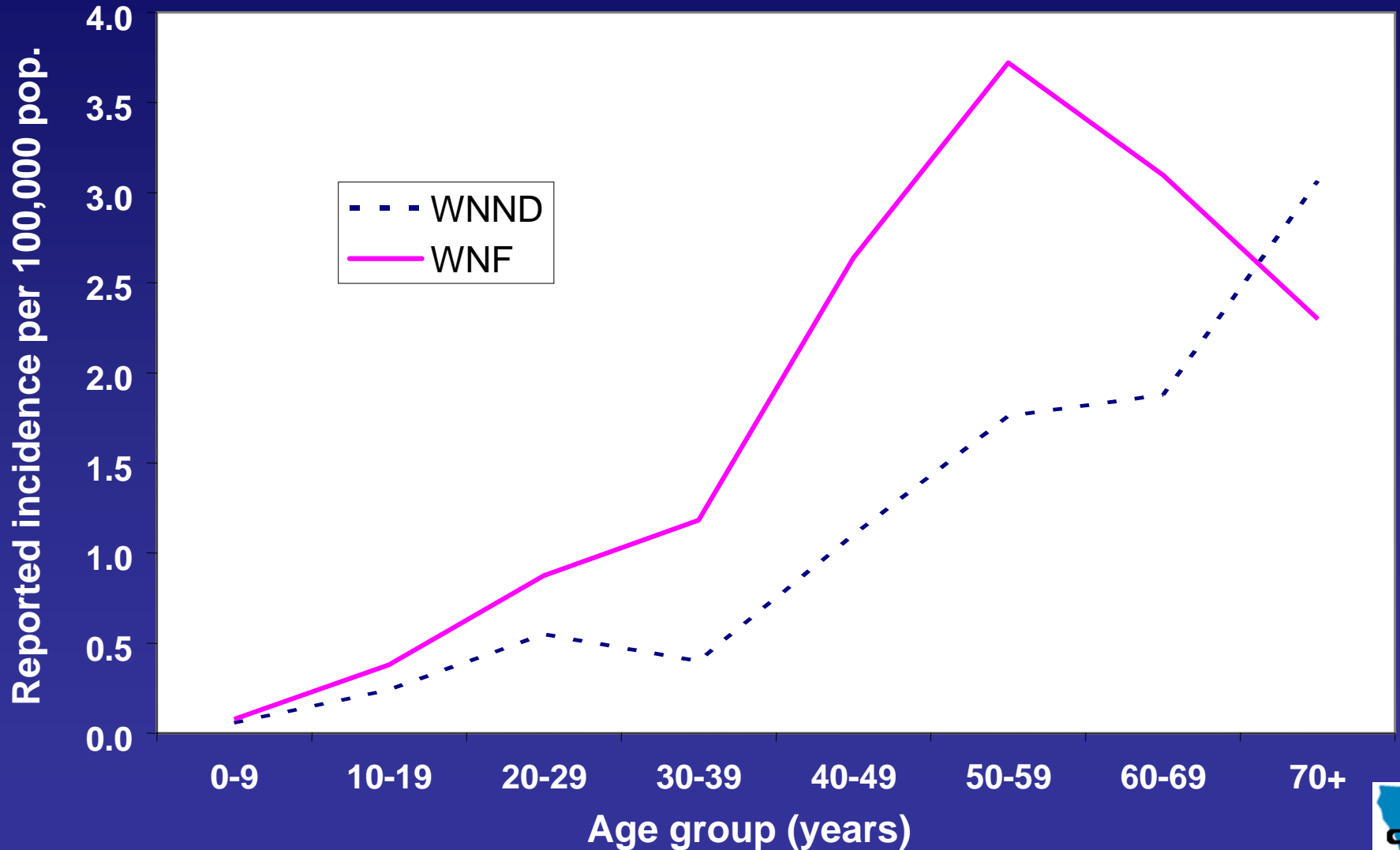
	2004	2005
Human infections	830	929
Counties	23	40
Positive blood donors	66	93
Symptomatic donors	15 (23%)	42 (45%)

Human WNV Clinical Presentation 2004 - 2005

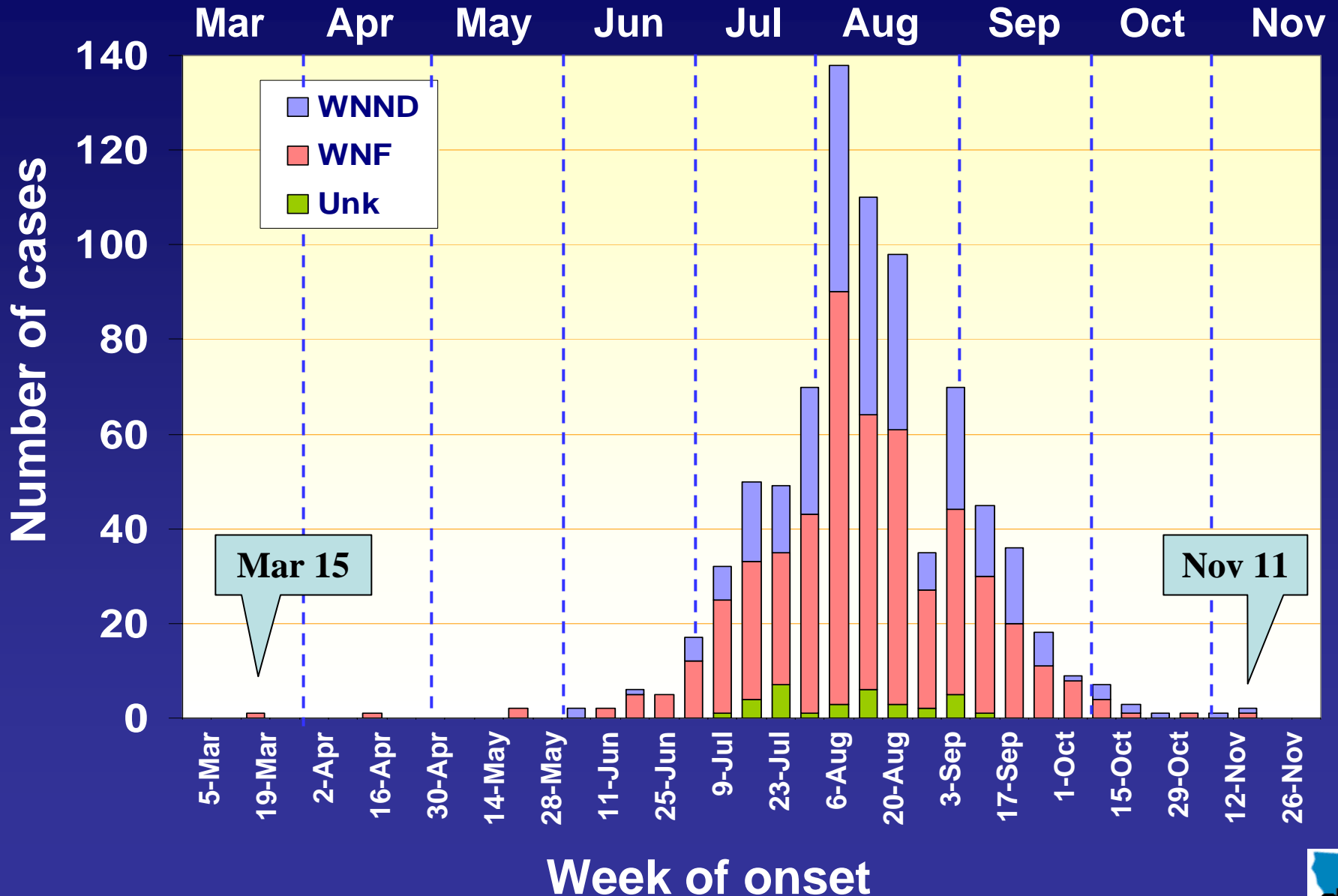
	2004	2005
Number of symptomatic cases	779	874
Clinical presentation		
Neuroinvasive	289 (42%)	303 (36%)
Fever	395 (58%)	530 (64%)
Unknown	95	41
Median age	52 yrs	51 yrs
Fatal cases	28	18
Median age of fatalities	76 yrs	79 yrs

Incidence of WNV illness by age and clinical presentation California 2005

(n=818)



Human WNV Cases in California, 2005

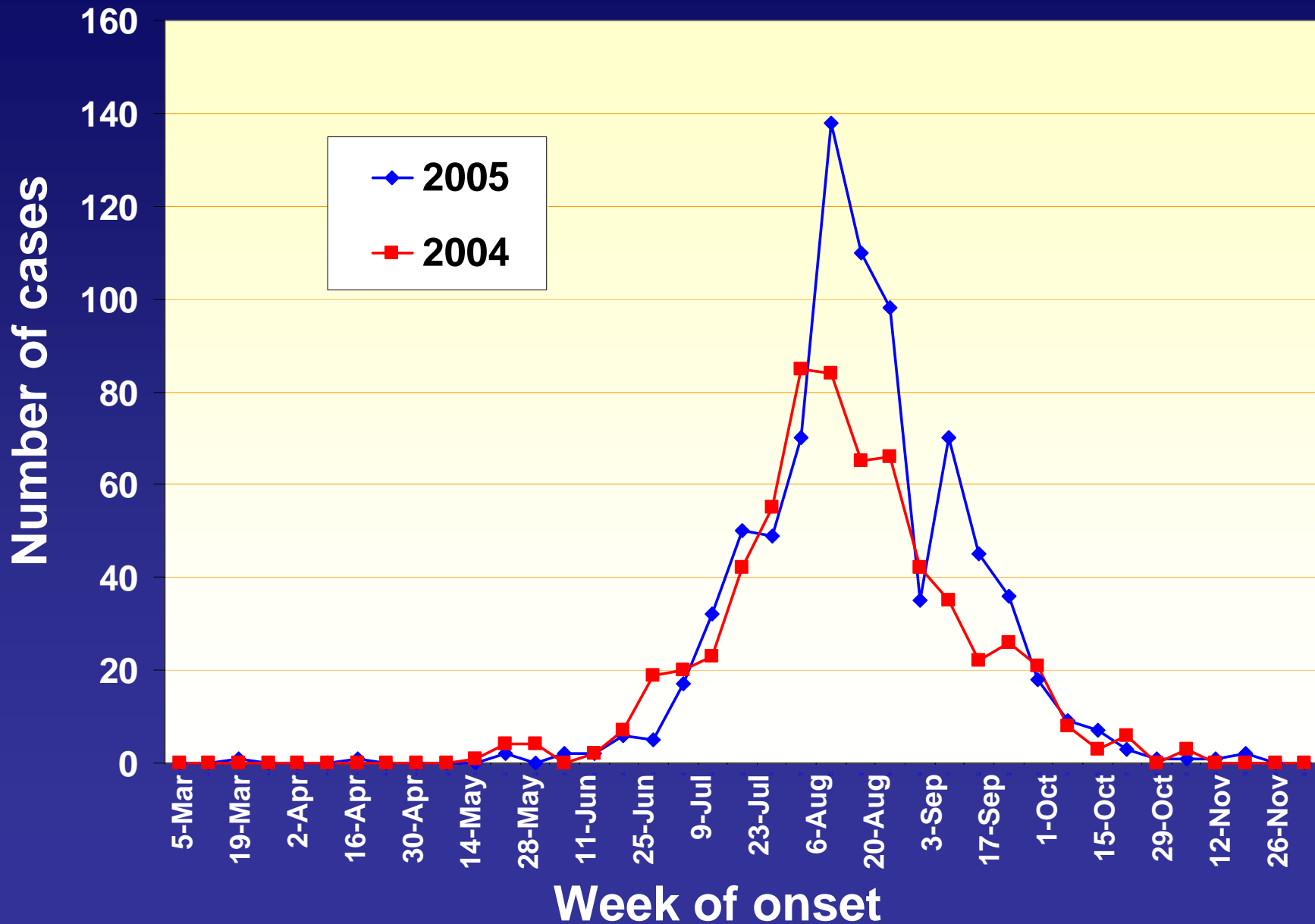


• Onset dates not available for all patients

* Estimated date of onset



Onset of Human Illness 2004 - 2005



Dead Bird Surveillance

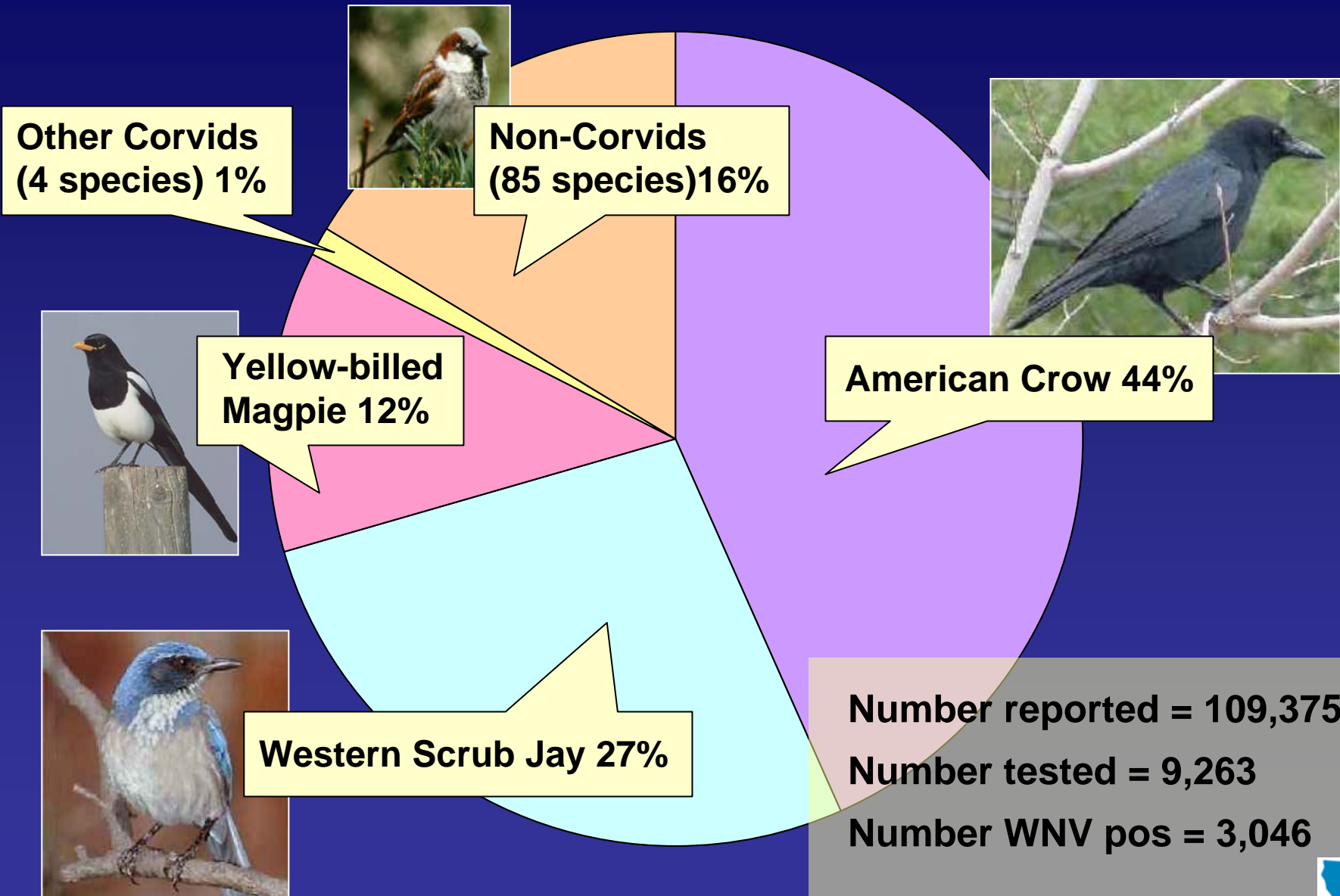


Dead Bird Surveillance Program 2000 - 2005

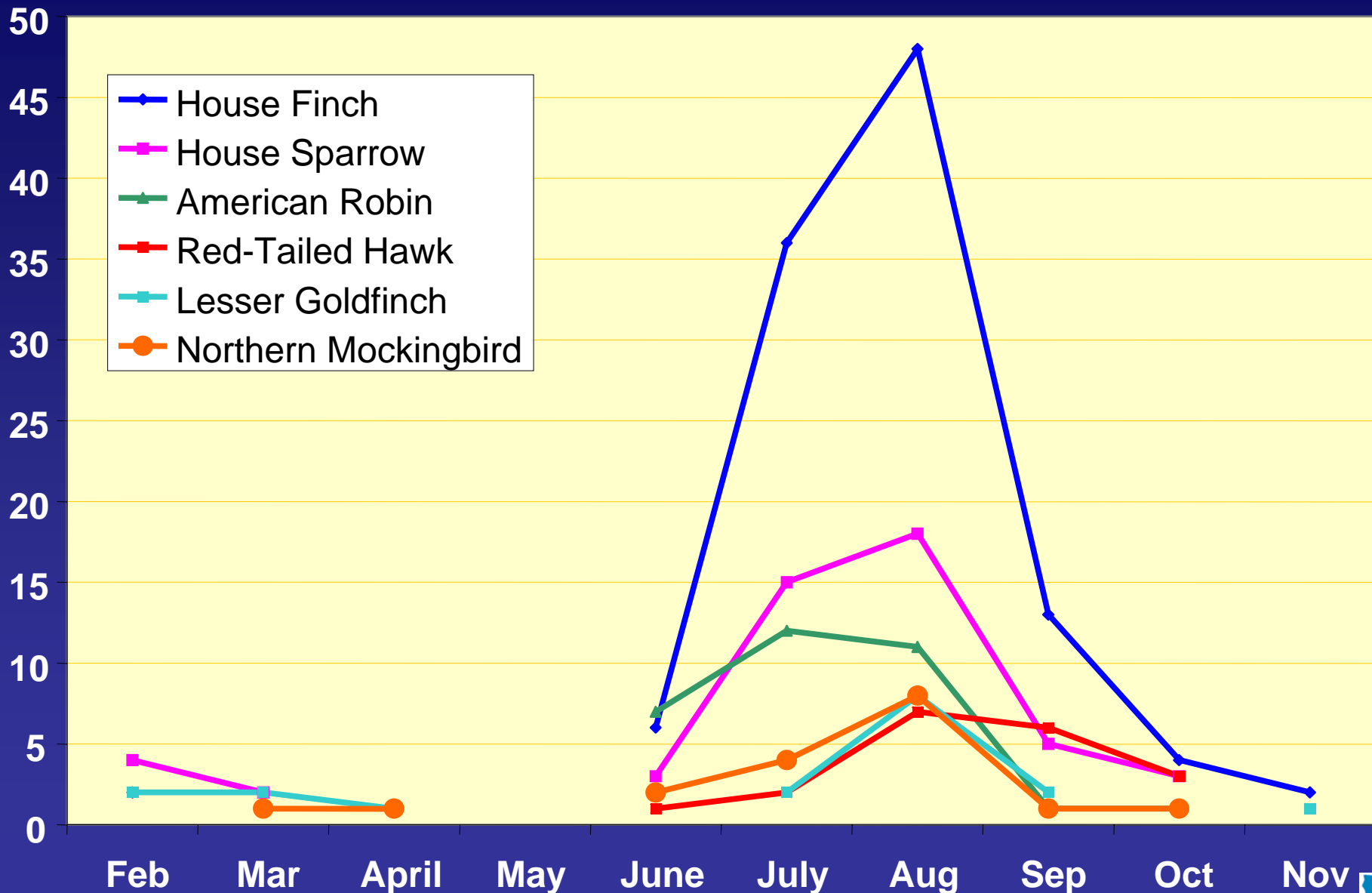
Year	Reported	Tested	Positive
2000	40	20	0
2001	68	18	0
2002	3,666	653	0
2003	8,650	1,765	96
2004	93,057	5,728	3,232
2005	109,375	9,263	3,046



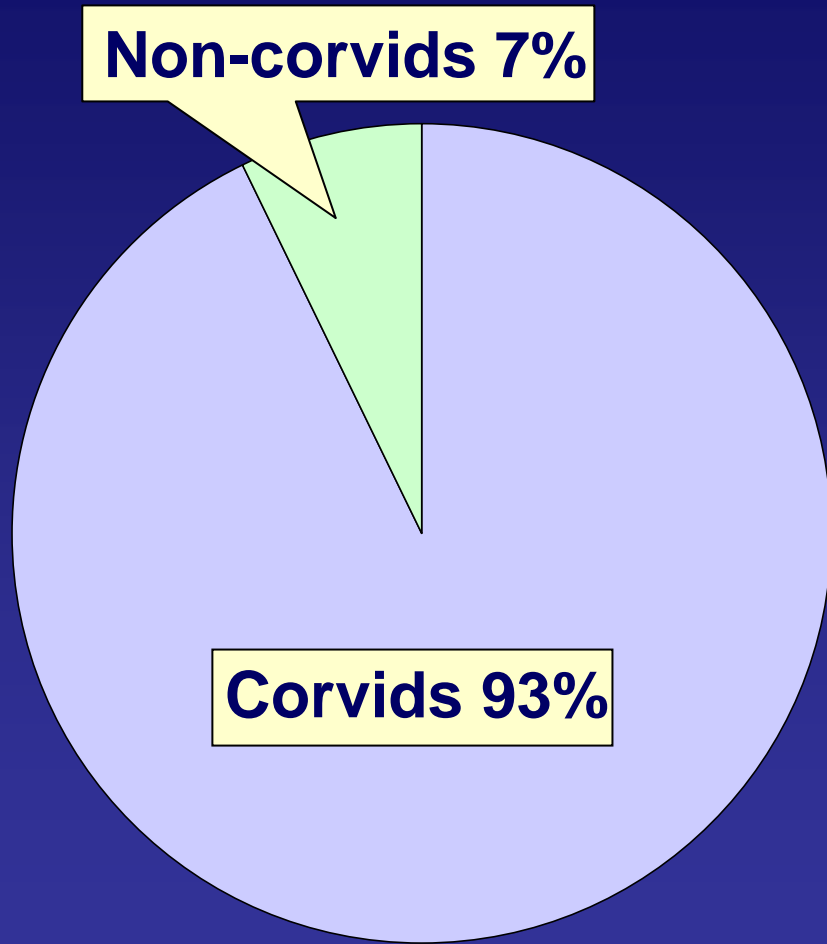
2005: 92 species of WNV positive dead birds



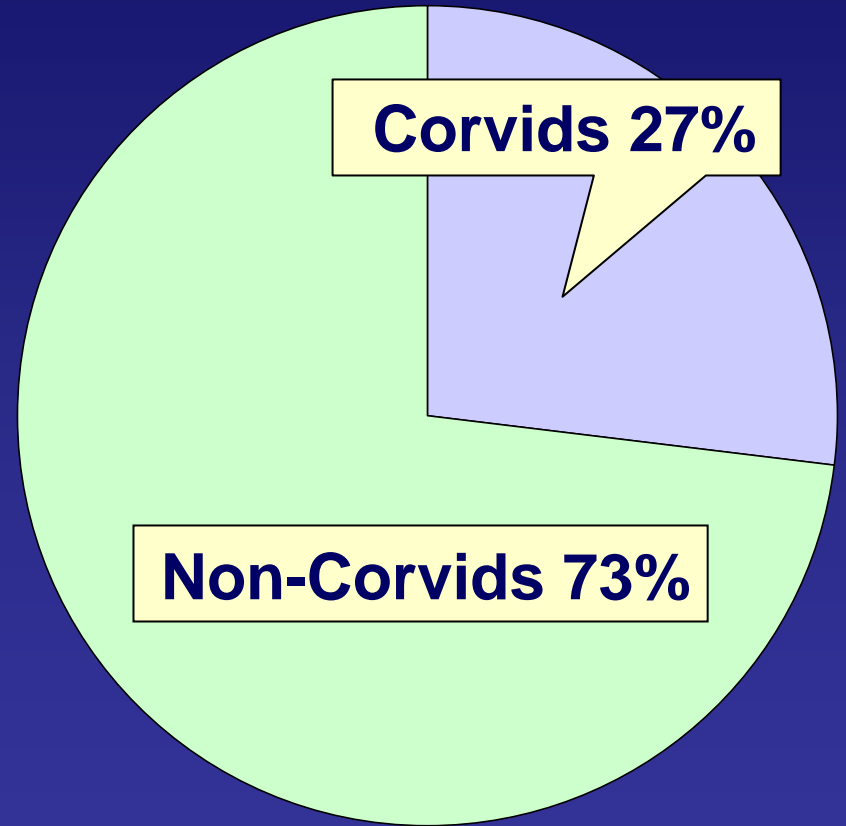
Top 6 WNV Positive Non-Corvids, 2005



WNV Positive Corvids and Non-Corvids January-April



2004



2005

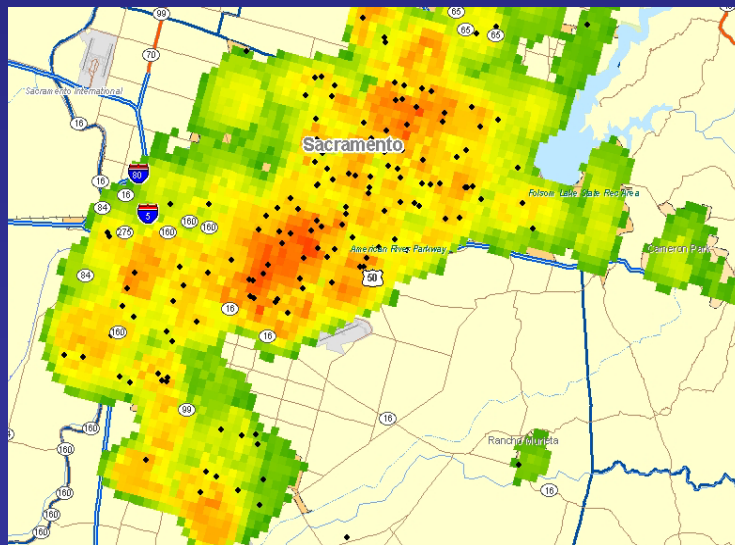
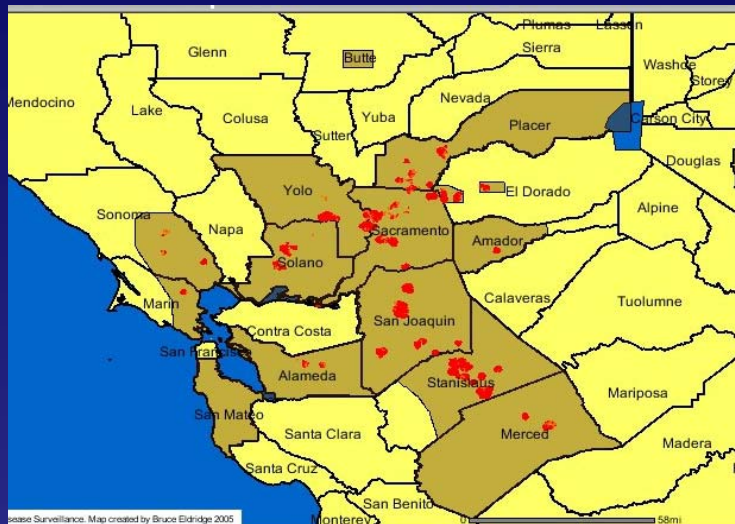




Dead Birds Reported 2005

n = 109,375

DYCAST* Human WNV Risk Modeling System



DYCAST in 2005

- **83% accuracy in predicting** human cases with quarter-square mile resolution (cells)
- **50% of cases** occurred in cells identified as high risk approximately **one month** prior to case onset
- Used to evaluate efficacy of **aerial adulticiding** in Sacramento County

* Dynamic Continuous-Area Space-Time



WNV in California

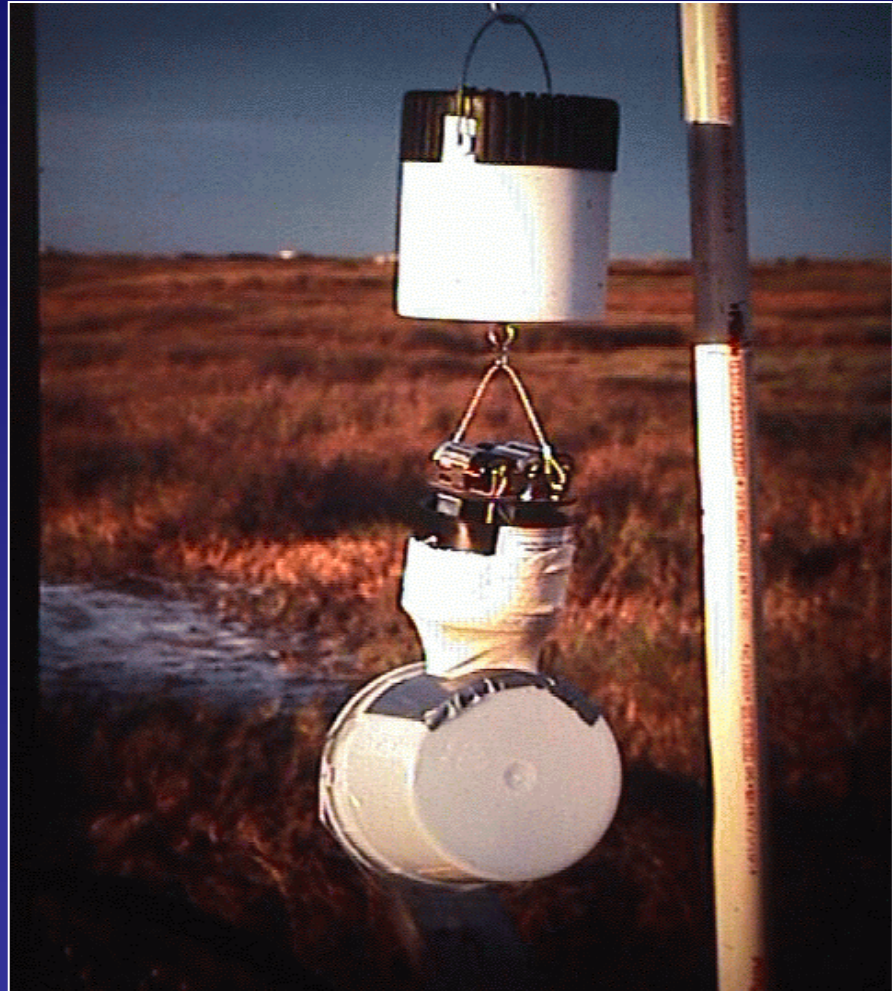
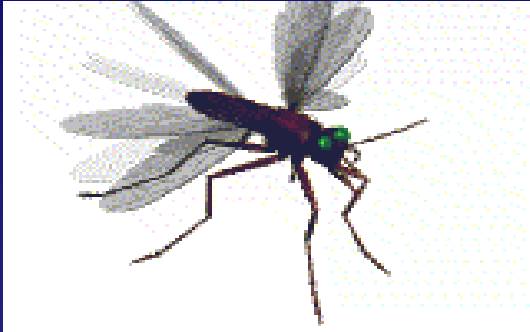
Tree Squirrels - 2005



- **First positive squirrel: June 10, 2005**
 - **Placer County**
- **Prevalence (PCR) was 27% (48 / 180)**
- **Similar prevalence in dead birds (35%)**

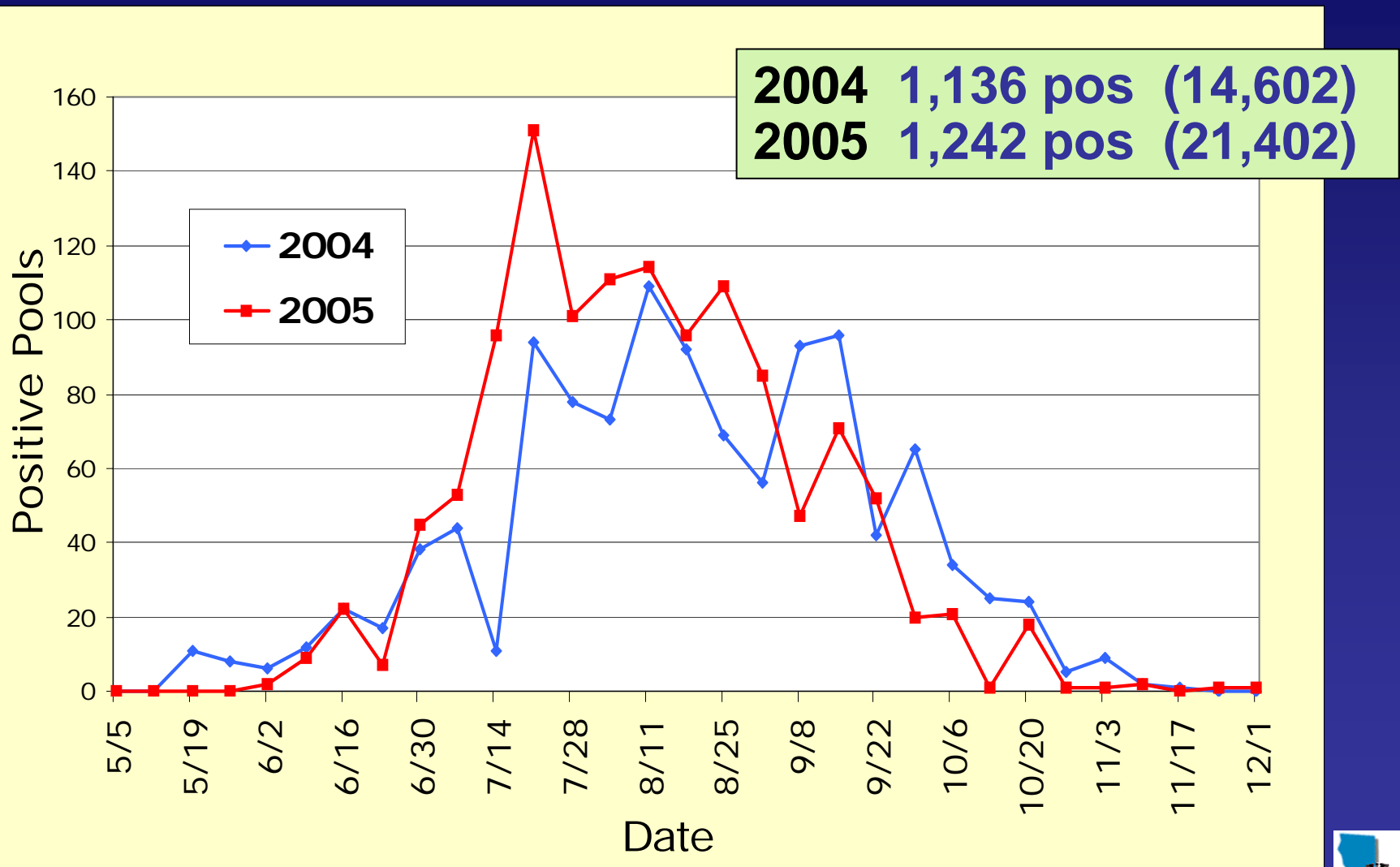


WNV Activity in Mosquitoes in 2005



WNV Activity in Mosquitoes

number positive pools

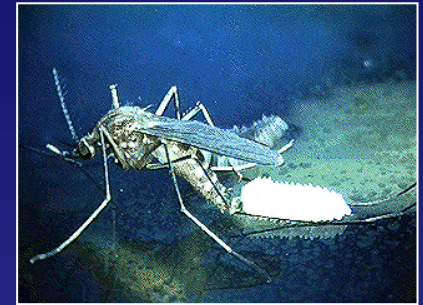


WNV Positive Mosquito Species

1,242 pos. pools / 21,402 mosquitoes tested

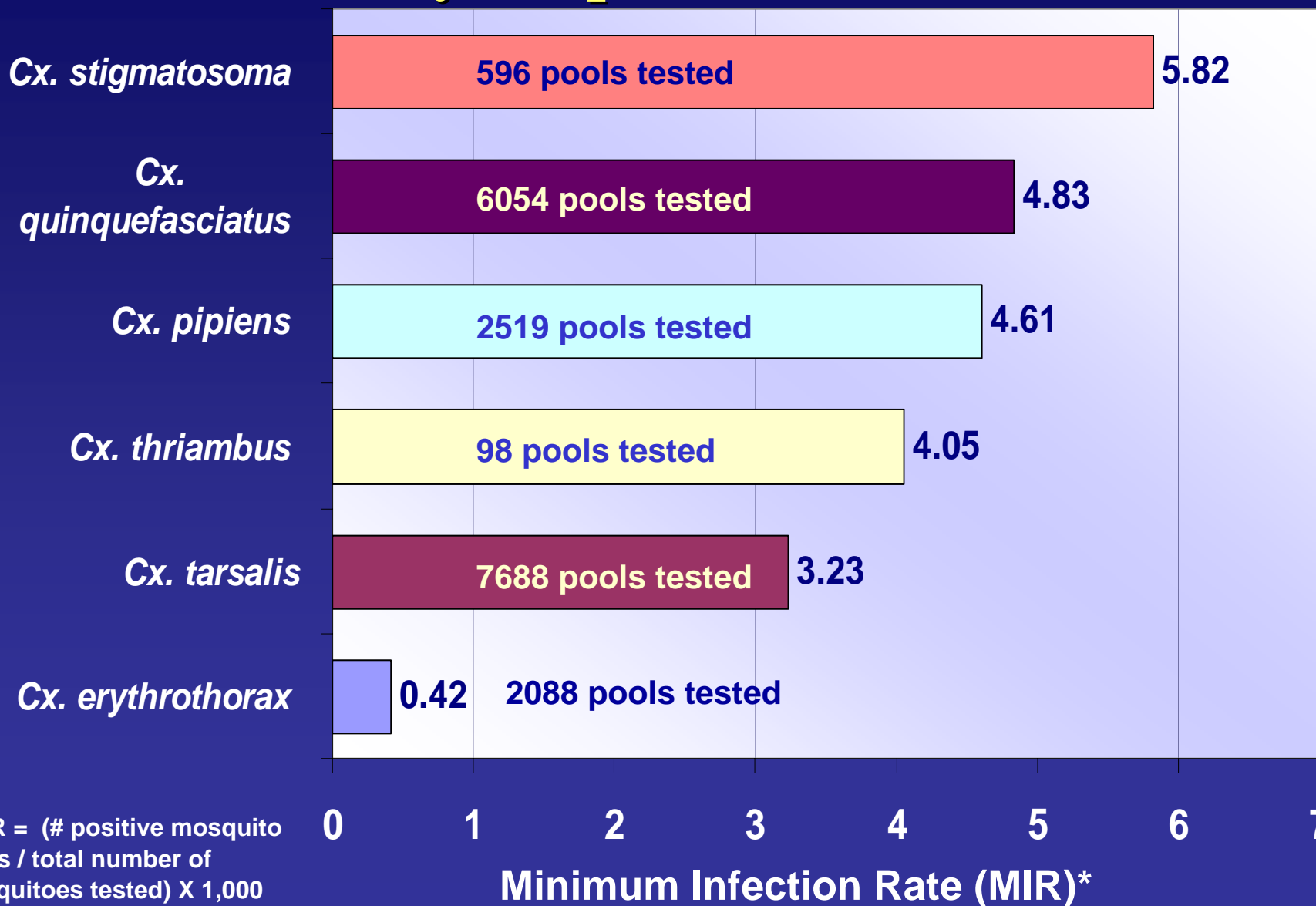
Culex

<i>quinquefasciatus</i>	476	(38%)
<i>tarsalis</i>	460	(37%)
<i>pipiens</i>	240	(19%)
<i>stigmatosoma</i>	33	(2.7%)
<i>erythrothorax</i>	26	(2.1%)
<i>thriambus</i>	7	(<1%)



Plus *Anopheles freeborni* (1)

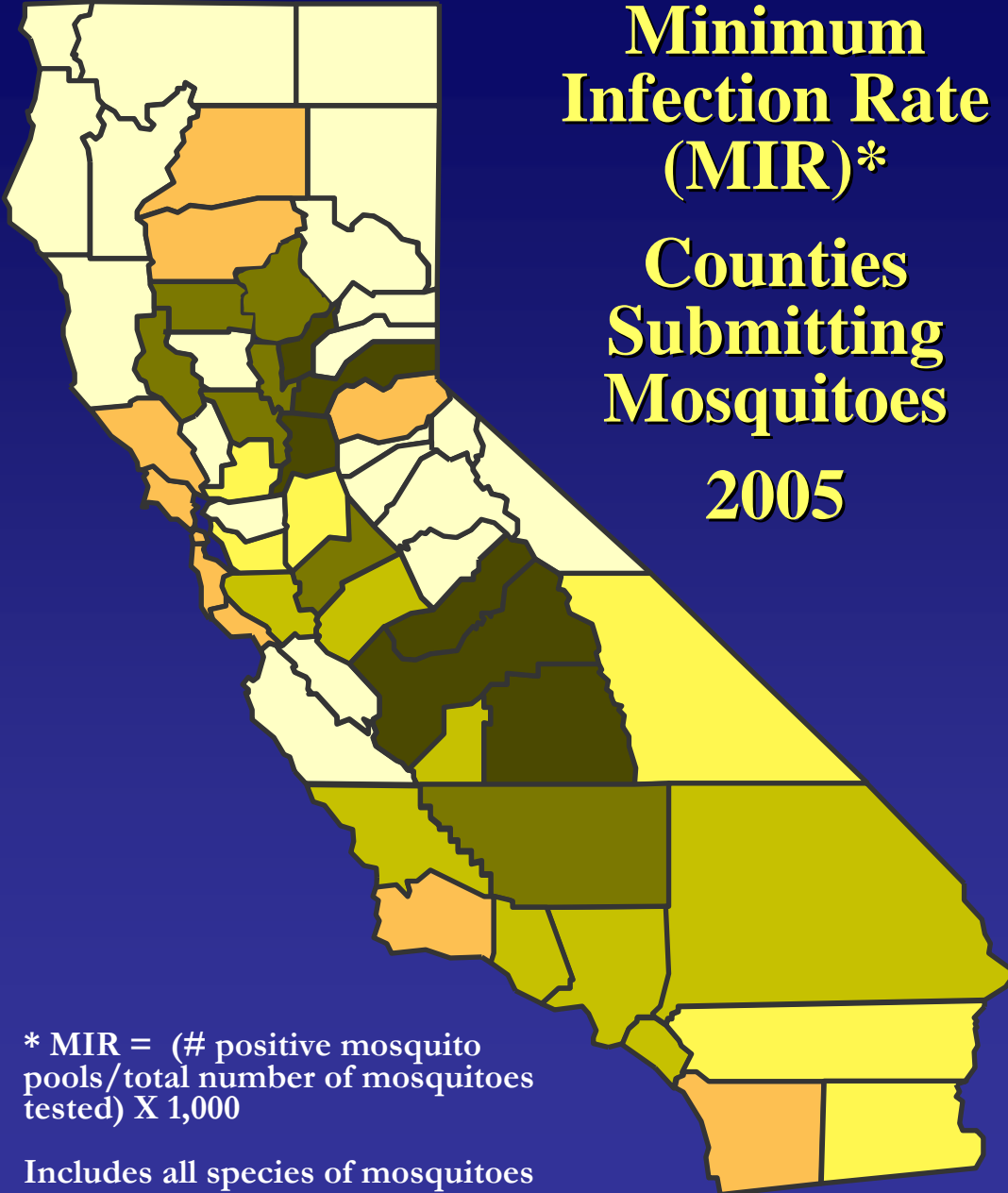
Minimum Infection Rates (per 1,000) by Species July - September 2005









Minimum Infection Rate (MIR)*

Counties Submitting Mosquitoes

2005



Sacramento	7.3	≥ 4.0	
Placer	5.9		
Fresno	4.9		
Tulare	4.5		
Yuba	4.4		
Madera	4.3		
Yolo	3.7	≥ 2.0	
Stanislaus	3.6		
Butte	2.8		
Sutter	2.7		
Lake	2.4		
Glenn	2.4		
Kern	2.0		
San Bernardino	1.9	≥ 1.0	
Los Angeles	1.7		
Ventura	1.7		
Kings	1.5		
San Luis Obispo	1.5		
Santa Clara	1.4		
Merced	1.2	≥ 0.1	
Orange	1.0		
Imperial	0.8		
Riverside	0.8		
San Joaquin	0.8		
Solano	0.6		
Alameda	0.5	0	
Inyo	0.3		
Contra Costa	0.1	No mosquitoes tested	
No positive pools	0		

* MIR = (# positive mosquito pools / total number of mosquitoes tested) X 1,000

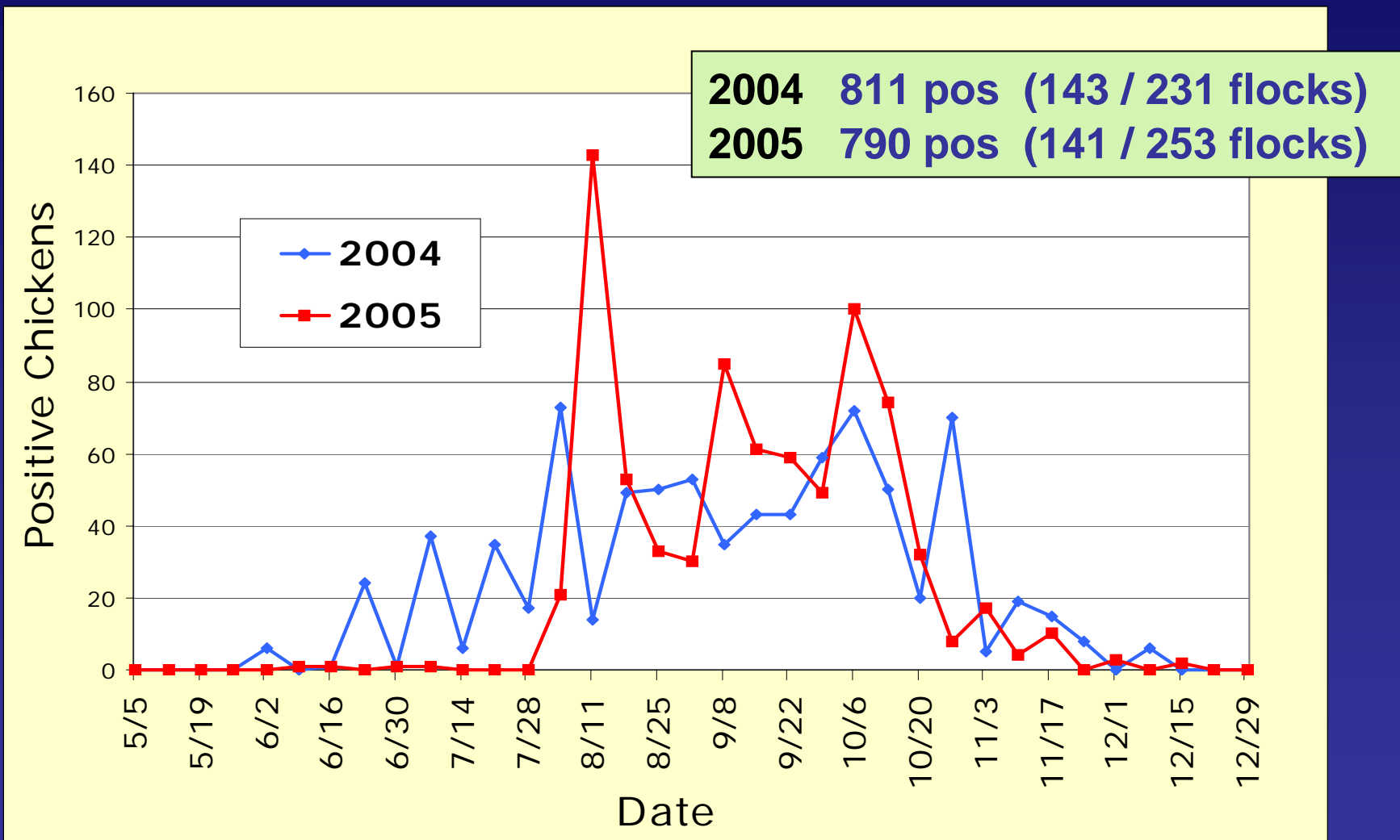
Includes all species of mosquitoes



WNV Activity in Sentinel Chickens in 2005

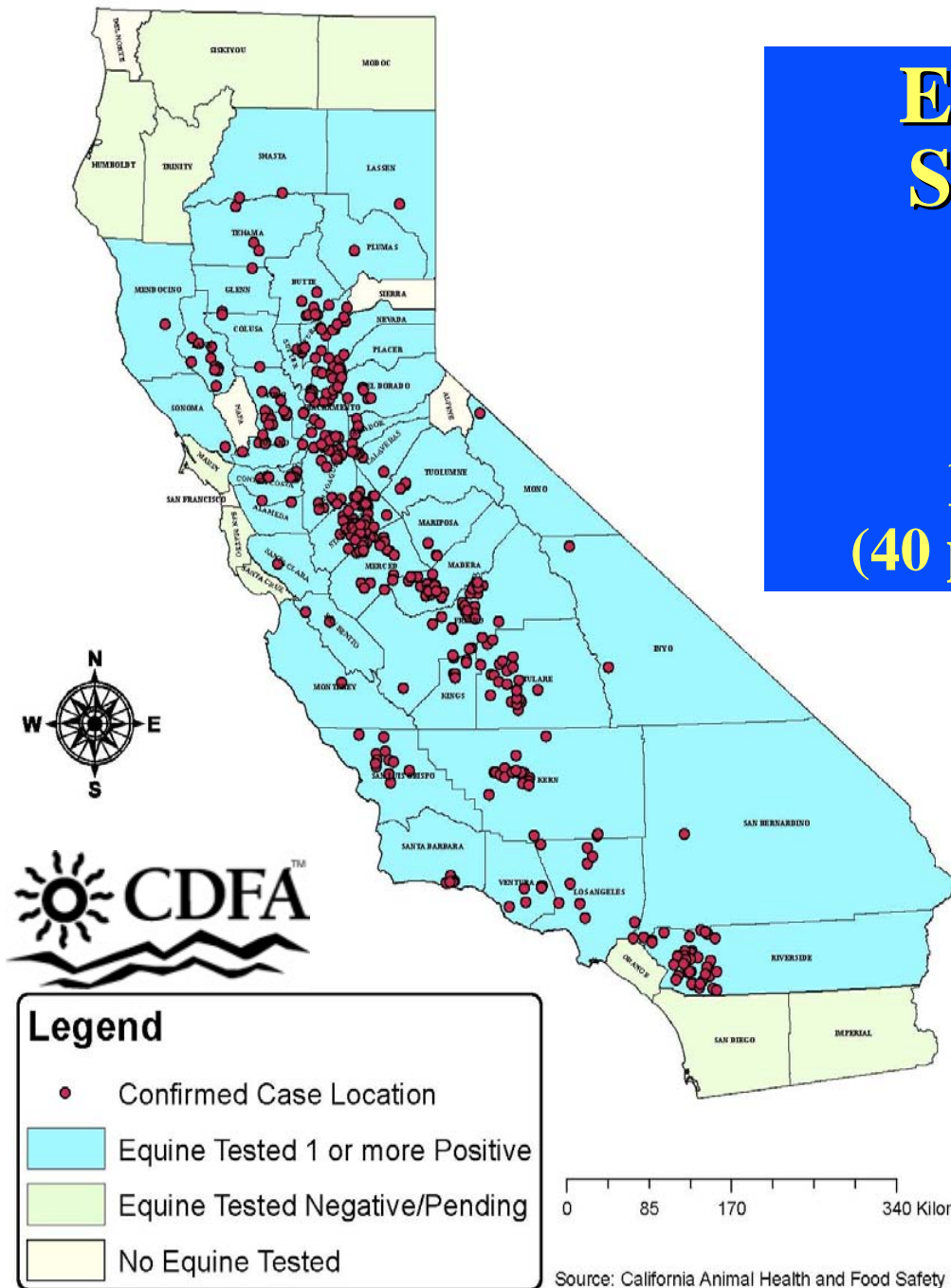


WNV Activity in Sentinel Chickens



Equine WNV Surveillance 2005

456 cases
1,295 tested
(40 positive counties)



2004: 540 cases

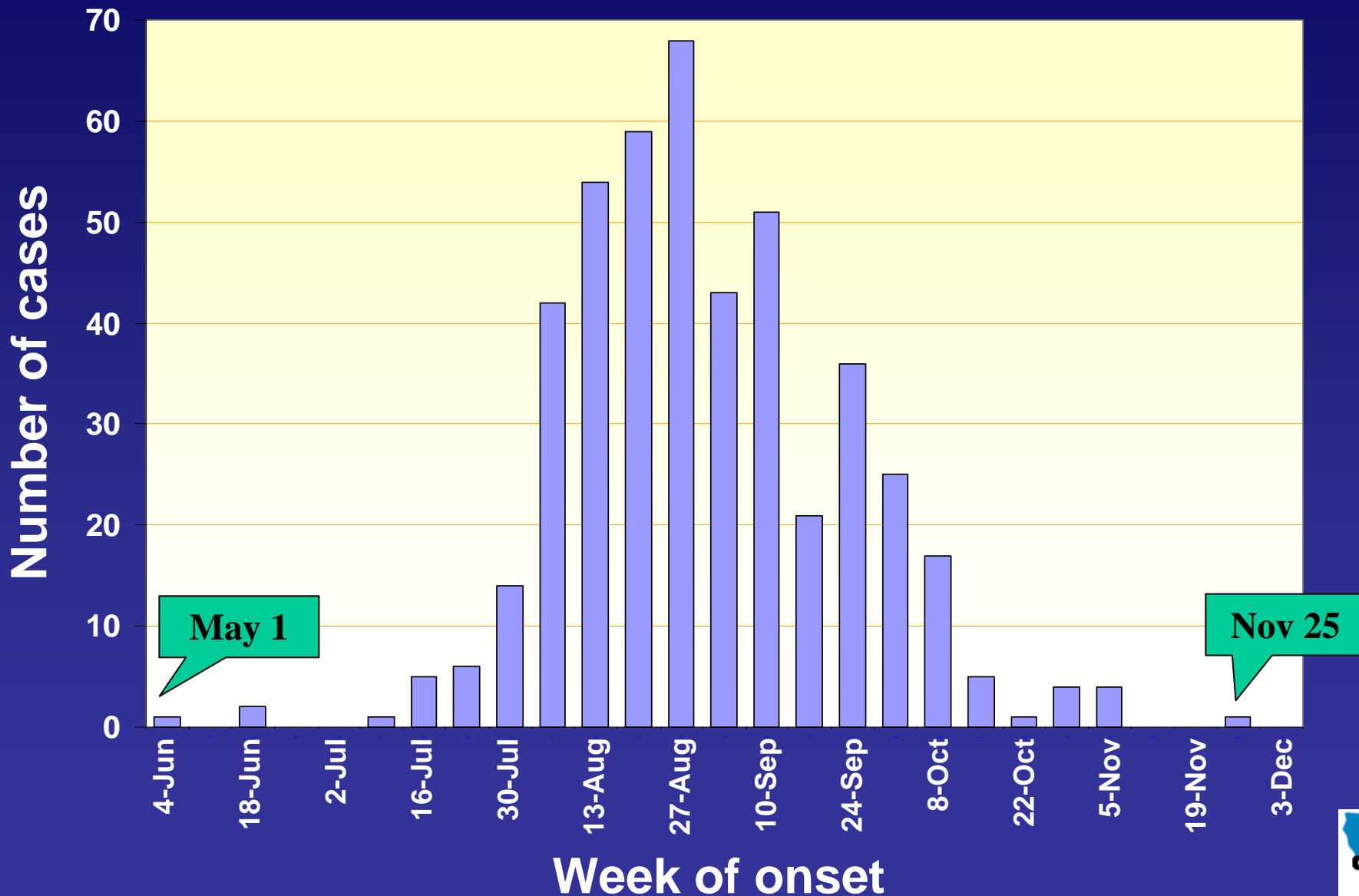


2005 Equine WNV Data

- 456 WNV infected horses (40 counties)
- 200 (44%) died / euthanized
- Vaccination status
 - 20 properly vaccinated
 - 78 improperly vaccinated
 - 342 non-vaccinated
- Median age: 13 years (4 mos – 40 years)



Week of Onset for Equine WNV Cases California, 2005





WNV Team at DHS

- **VBDS**

- ✓ Vicki Kramer
- ✓ Stan Husted
- ✓ Al Hom
- ✓ Ryan Carney
- ✓ Kerry Padgett
- ✓ Lauren Marcus
- ✓ Colleen Barclay
- ✓ Anne Kjemtrup
- ✓ Mark Novak
- ✓ Renjie Hu
- ✓ Hotline staff
- ✓ Regional biologists

- **DIS**

- ✓ Jon Rosenberg

- **VPHS**

- ✓ Ben Sun
- ✓ James Glover
- ✓ Claudia Erickson

- **VRDL**

- ✓ Carol Glaser
- ✓ Cynthia Jean
- ✓ Cindi Cossen
- ✓ Liz Baylis
- ✓ Shilpa Gavali

- **OPA**

- ✓ Lea Brooks

Collaborators



- Local Health Departments
- Local Public Health Laboratories
- Environmental Health Departments