

# Vector-Borne & Zoonotic Diseases Update

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## ARIZONA



# Arizona Zoonoses Update

<u>DISEASE</u>	<b>2002</b>	<b>2003</b>
HPS cases	<b>3</b>	<b>0</b>
Plague cases	<b>0</b>	<b>0</b>
Plague (rodents)	<b>2 epizootics</b>	<b>0</b>
RMSF	<b>1</b>	<b>1 (fatal)</b>
Tularemia cases	<b>1 conf., 1 susp</b>	<b>1</b>



# Animal Rabies

SPECIES	2002	2003
Bats	56	44
Foxes	33	18
Skunks	44*	8
Bobcats	3	4
Coyotes	2	1
Dogs	1*	0
Javelina	1	0
Llamas	3	0
TOTALS	143*	75



# Rabies Exposures

<u>SPECIES</u>	<u># EXP. 2002</u>	<u># EXP. 2003</u>
<b>BATS</b>	<b>7</b>	<b>24</b>
<b>FOXES</b>	<b>5</b>	<b>6</b>
<b>SKUNKS</b>	<b>2</b>	<b>0</b>
<b>BOBCATS</b>	<b>4</b>	<b>1</b>
<b>DOG</b>	<b>105</b>	<b>--</b>
<b>LLAMAS</b>	<b>7</b>	<b>--</b>
<b>TOTAL</b>	<b>130</b>	<b>31</b>



## Other.....

- Roof Rats (*Rattus rattus*) – Maricopa Co.
- *Aedes albopictus* introduction – Tucson
- *Aedes aegypti* – Southern AZ (5 counties)





# West Nile Virus Surveillance- 2003

- Human Case F/U
- Mosquito Pools
- Dead Bird Testing
- Sentinel Chickens
- Equine Case F/U



# West Nile Virus — An Emerging Public Health Threat in Arizona?

By Craig Levy and William Slanta

The West Nile virus (WNV) had not been documented in the Western Hemisphere until 1999. However, the virus survived its first winter and is rapidly spreading across the United States. WNV has been detected in humans, birds, mosquito pools, sentinel chickens and other animals. Although not yet detected in Arizona, the arrival of WNV is expected to occur this year. Because of Arizona's history of sporadic cases of arboviruses such as St. Louis encephalitis (SLE) and western equine encephalitis (WEE) it is important to now include WNV into our routine seasonal arbovirus surveillance.

The national WNV surveillance program is a cooperative



for arboviruses in 2001. One case of SLE was confirmed in a Maricopa County child in September and an arboviral infection was ruled out as the cause of encephalitis in 17 other cases.

Reporting of encephalitis is required in Arizona and prompt reporting of cases is necessary for a timely public health investigation and response. To report encephalitis cases, contact your local health department or the Arizona Department of Health Services' Vector-Borne and Zoonotic Diseases staff at (602) 230-5932.

Serum samples of all encephalitis cases should be submitted to the State Lab for arbovirus testing. Blood should be collected in a red top tube or serum separator



# WNV- Human Cases, 2003

- **Total # Cases = 13      Fatal -1**
- **Age Range: 17 – 88 yrs., Med.=62**
- **Clinical Presentation:**
  - **Encephalitis:            7    (54%)**
  - **Meningitis only:        1    (8%)**
  - **West Nile Fever:        3    (23%)**
  - **Unspecified:            2    (15%)**



# West Nile Virus – Humans

## Race/Ethnicity

- **White/Unspecified: 7 (54%)**
- **Native American: 5 (38%)**
- **Hispanic: 1 (8%)**

## Gender

- **Female: 6 (46%)**
- **Male: 7 (54%)**



# West Nile Virus – Humans

COUNTY of RESIDENCE	NUMBER of CASES	SITE of EXPOSURE
GILA	2	San Carlos, AZ* Peridot, AZ *
GRAHAM	2	Bylas, AZ * Colorado – 1
MARICOPA	7	Out-of-State –6 Gila Res, AZ –1*
PIMA	2	Sells, AZ – 1* Tucson, AZ -1



# WNV–Mosquito Pools, 2003

- Mosquito Surv. – April – November
- 26 surv. partners – 15 counties
- Testing by:
  - \* Arizona State Lab – PCR & Veros
  - \* UA Entomology - VecTest®
  - \* Yuma County PAD - VecTest®



# Mosquito Pool Results, 2003

- Total # Pools Tested = 2,581
- Total # Mosquitoes = 68,207
- Rep: 20 species, 6 genera
- Arbovirus Positive:
  - WNV.... 98
  - SLE .... 48
  - WEE .... 24



# Mosquito Pool Results, 2003

<u>COUNTY</u>	WNV	SLE+	WEE+
Apache	1 * /128	0	0
Cochise	9 / 245	0	0
Coconino	1 / 57	0	0
Graham	4 / 97	0	0
La Paz	2 / 133	1	1



# Mosquito Pool Results, 2003

<u>COUNTY</u>	WNV+	SLE+	WEE+
<b>Maricopa</b>	<b>27 / 478</b>	<b>15</b>	<b>13</b>
<b>Pima</b>	<b>7 / 219</b>	<b>0</b>	<b>0</b>
<b>Pinal</b>	<b>7 / 311</b>	<b>9</b>	<b>0</b>
<b>Yavapai</b>	<b>3 / 50</b>	<b>0</b>	<b>0</b>
<b>Yuma</b>	<b>37 / 671</b>	<b>32</b>	<b>1</b>
<b>TOTAL</b>	<b>98</b>	<b>48</b>	<b>24</b>



# WNV+ Mosquito Species

- *Culex tarsalis* 63 (64%)
- *Cx. quinquefasciatus* 20 (20%)
- *Cx. erythrothorax* 1 (1%)
- *Cx. sp.* 2 (2%)
- *Aedes vexans* 3 (3%)
- *Psorophora columbiae* 8 (8%)
- *Anopheles franciscanus* 1 (1%)



# St. Louis Encephalitis

- **Five Human Cases - 2003**
- **All in Maricopa County**
- **Clustered: North Phoenix & Scottsdale**
- **Onsets: July and August**
- **All locally acquired**
- **Age range: 48 – 73**
- **Encephalitis – 4, Meningitis - 1**



# Aseptic Meningitis Outbreak

- **2003: AZ's experienced its worst outbreak of aseptic meningitis (AM) w/ 1,500+ cases**
- **“Normal year” = 200 – 300 cases**
- **98<sub>±</sub> % enterovirus – esp. Echovirus 30**
- **Although not vector-borne, enteroviral cases of AM confound state and county efforts to identify arbovirus-related cases of meningitis.**



# WNV-Equines, 2003

**Total: 137 cases in 11 counties**

- Apache .....23
- Cochise.....8
- Coconino....2
- Gila.....6
- Graham .....7
- Maricopa...28
- Navajo.....17
- Pima.....23
- Pinal .....11
- Yavapai ....10
- Yuma .....2



# Dead Bird Surveillance, 2003

- 900 dead birds were tested by UA-VDL
- Rep: 50+ wild sp., 21 domestic/pet/exotic
- Testing methods: IHC or VecTest®
- 54 birds tested WNV positive:
  - \* Rep: 13+ species
  - \* 10 counties





# WNV+ Dead Birds, 2003

- Sparrows – 18 (33%)
- Finches – 9 (17%)
- Crows – 5 (9%)
- Doves – 5 (9%)
- Pigeons – 2 (4%)
- Woodpeckers–2(4%)
- Thick-bill parrot-2 (2%)
- Canary - 1 (2%)
- Grackle - 1 (2%)
- Starling - 1 (2%)
- Cactus Wren–1 (2%)
- Mexican Jay –1 (2%)
- “28” parrot – 1 (2%)
- Macaw – 1 (2%)
- Unspec. – 4 (7%)

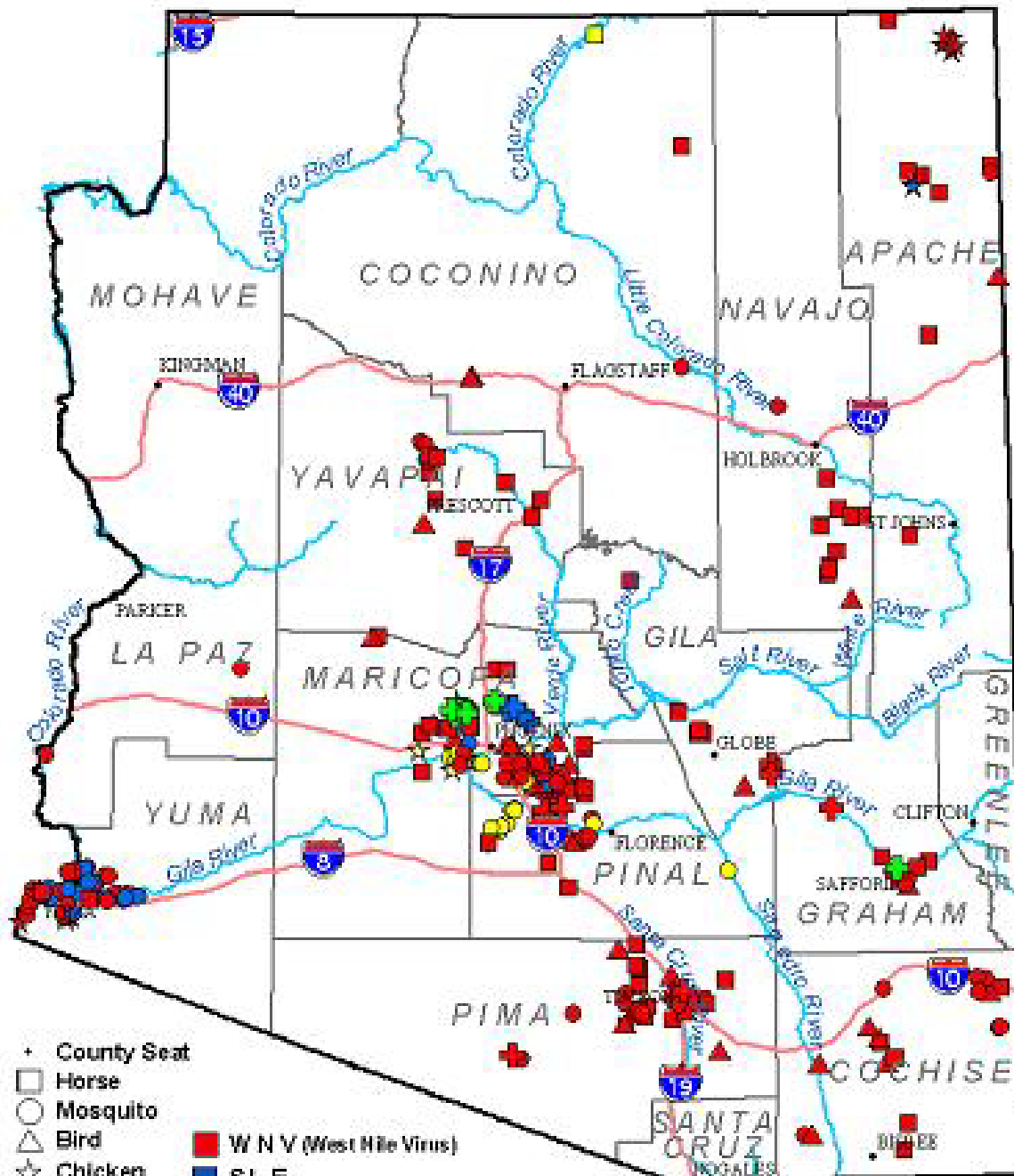


# Sentinel Chickens -2003



- 19 Sentinel Flocks in 8 counties
- Each flock = 10<sub>±</sub> chickens
- Chickens bled every two weeks
- Bloods tested @ ASHL – IgM ELISA
- 26 chickens seroconverted to WNV
- Three counties: Apache, Maricopa, Yuma





- County Seat
- Horse
- Mosquito
- △ Bird
- ☆ Chicken
- ⊕ Human
- WNV (West Nile Virus)
- SLE
- WEE
- Human/Import WNV



# “Wild Speculation”- 2004

- AZ & CA will be the next WNV epicenter
- WNV “hot zones” will become apparent
- Hot zones will be assoc. w/ water habitats
  - rivers, drainages, wetlands, etc.
  - agricultural areas
- Increased WNV activity in suburbs

