

A photograph of a dead bird lying on the ground near a large tree trunk in a grassy field. The bird is dark-colored and appears to be a crow or raven. The tree trunk is on the left side of the frame, and the ground is a mix of dirt and grass. The background shows a line of trees under a bright sky.

West Nile Virus

DoD National Surveillance

Ben Pagac

Army Center for Health Promotion & Preventive Medicine

Fort George G. Meade, MD

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Army CHPPM-N,S,W Survey Officers and Technicians

DoD (Army) Involvement - Background

- History – Arthropod-borne diseases changed the course of battles and often caused more profound human mortality/morbidity than weapons.
- Preventive Medicine (PM) mandate:
[para 10-3.b(2), AR 40-5 - Conduct surveillance of vectors and pests affecting the health and welfare of the Army community]
- Resources/Responsibilities– Major installations typically have:
 - Medical Facilities (testing of suspect cases – State Labs, USAMRIID)
 - Preventive Medicine Environmental Science Officers (ESO) and Environmental Health Technicians (91-S) with training in basic entomology/sampling/microscopy (training, mosquito testing supt CHPPMs)
 - Veterinarians, Veterinary Clinics (testing; equines- Vet Comm., birds-USGS)
 - Public Works – Pest Management Personnel
 - Creative Resourcing – Environmental Offices

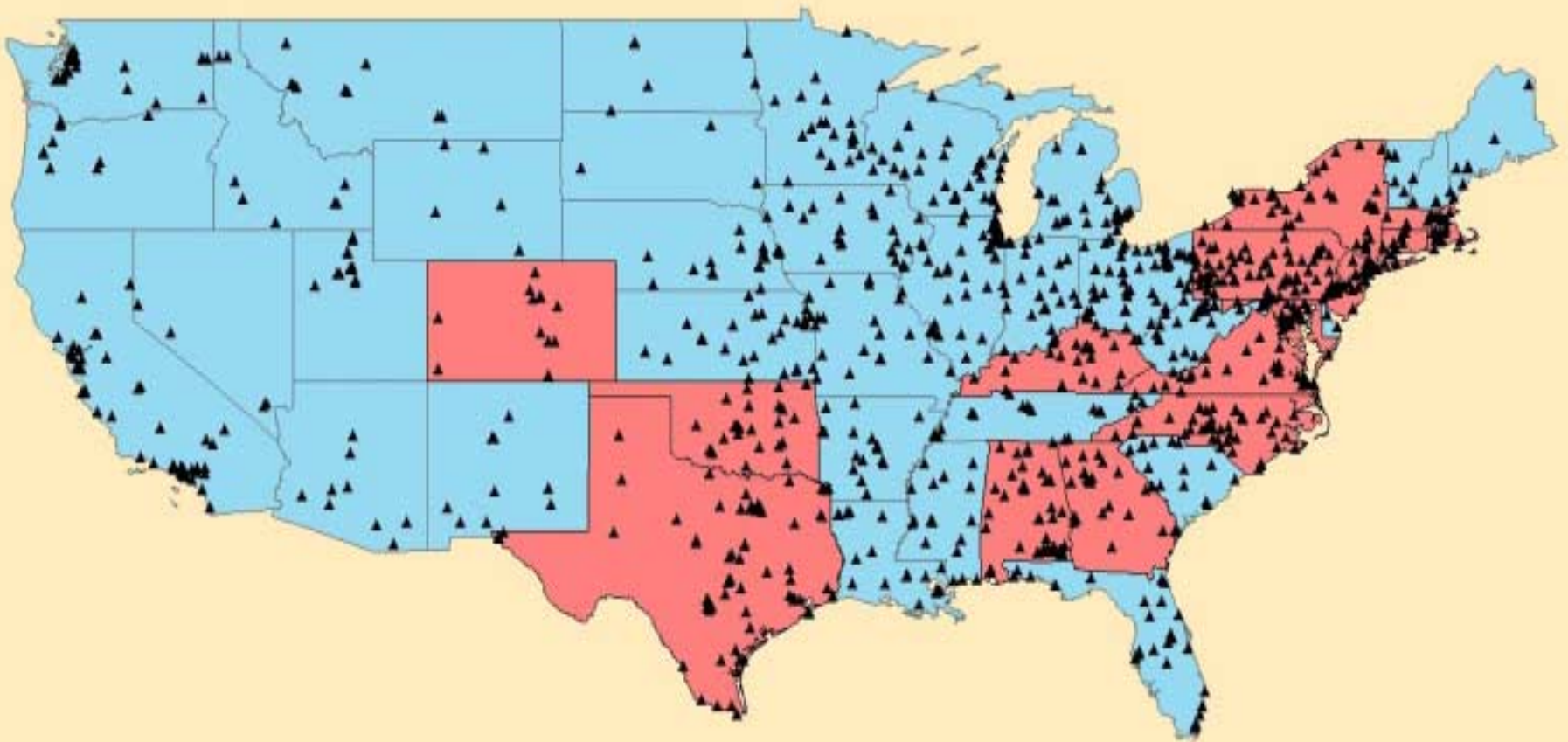
Since North American WNV Onset Key DoD Surveillance Objectives

1. Rapid, open communication
2. Blend multi-agency efforts
3. Early detection
4. Implement measured response planning based on surveillance findings
5. Reduce the human disease threat

DoD Installations/facilities



DoD Installations/facilities



States with at least one installation reporting a WNV+ Dead Bird – 2003

(submitting installations = 28 states)

DOD WNV Surveillance 2002 - 2003

Humans:

2002 - No confirmed AD military or dependent cases.

2003 - At least 25 human cases treated at 3 Army MTFs. All fully recovered.

- Army Blood Screening Program (LTC Elain Perry)
 - Army Donor Centers (began 4 Aug 03)
 - Navy Donor Centers (began 8 Aug 03)
 - 39 of 27,119 units tested (0.14%) were + for WNV

Mammals:

2002 -

- Equine Surveillance: 0+/468 DoD-owned horses/mules and a donkey tested (VETCOM FADL Lab)

2003 -

- Equine Surveillance: 0+/259 DoD-owned equines tested (VETCOM FADL Lab). One WNV+ civilian-owned horse (Fort Meade, MD) reported.
- Recommendation made for all DoD horses to be vaccinated.
- 1+ of 4 squirrels tested. Positive reported from Bolling AFB, MD (USGS-Madison)

Birds:

2002 –

- 106+/485 wild birds submitted (22%)*
(36+ installations/sites – 17 States & DC)
- 2+ of 2 Sentinel flocks (100%)
(2 installations – 2 states; VA, LA)

2003 –

- 52+/219 wild birds submitted (24%)**
(23+ installations/sites – 15 States & DC)
- 2+ of 2 Sentinel flocks (100%)
(2 installations – 2 states, VA, LA)

* USGS and other sources

**USGS only

Mosquitoes:

2002 – 284+/13,106 pools (115,247 fm) MIR=2.5/1000

15+ installations (8 states) of 95 submitting

2003 – 148+/21,799 pools (225,825 fm) MIR=.7/1000

29+ installations (13 states) of 134 submitting

3+ EEE (GA, SC) pools also detected (CHPPM-South)

Selected DoD Mosquito Surveillance Features and Approaches

- CHPPM-N,S,W designated regional mosquito testing labs
- Mosquito lab capabilities – RT-PCR using Light Cyclers
- Mosquito Wicking Assay valuable – with confirmation
- “WNV” - a place-holder for capability
- Mosquito collection emphasis on gravid traps/*Culex spp*
- Broad guidance: 10 traps, 2 nights/week
- Large trap catches are not a good thing
- WNV Surveillance Guide Created in 2000, modified and put on web in subsequent years – offers response planning guidance
- Training is critical

WNV Positive Mosquitoes/Birds - 2002

Installation with Viral Activity	First-Last Mosq Pool (# pools)	First-Last DB (# Pos Dead Birds)
Ft Sill, OK	17 Jun-20 Aug (8)	0
Wright Patterson AFB, OH	19 Jun –18 Jul (2)	7-14 Aug (3)
Ft McNair, DC	2 Jul-19 Sep (47)	7 Aug (1)
Andrews AFB, MD	9 Jul-7 Oct (41)	2-16 Aug (3)
Ft Myer, VA	10 Jul-25 Sep (101)	24 Jul-8 Aug (8)
Pentagon, VA	17 Jul-28 Jul (3)	26 Jul (2)
Ft McPherson, GA	17 Jul-18 Sep (14)	9 Aug-15 Sep (5)
Scott AFB, IL	19 Jul-20 Aug (5)	31 Jul-6 Aug (3)
Ft Meade, MD	30 Jul-24 Sep (8)	20 Aug-24 Sep (5)
SSAH, DC	30 Jul-20 Aug (19)	0
Bethesda NMC, MD	5-22 Aug (3)	22 Jul-7 Aug (2)
McAlester AAP, OK	14 Aug-22 (7)	0
Ft Detrick, MD	20 Aug-11 Sep (19)	28 Jul-21 Oct (8)
Ft Riley, KS	5 Sep (5)	14 Aug-16 Sep (4)
Pine Bluff Arsenal, AR	6 Sep (2)	0

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Current Mosquito Trapping Sites
 (as of Oct, 2003 Each site = 1 to 20 traps)

- NPS 
- Nat. Zoo 
- Army 
- Navy 
- Air Force 
- Arling/Alex. 
- DC 



Reducing the Threat

- √ Breeding source reduction (storm drains, catch basins)
- √ Overwintering source reduction
- √ Larval control
- √ Avoidance
- √ Personal Protection
- √ Adulticide



Targeted Adult Chemical Control...

- Thermal Fogger
 - Pyrethrin (ULD BP 100)
 - Storm Sewers, Culverts
 - Primarily *Culex pipiens*
- Back Pack Sprayer
 - Permethrin (Demand)
 - Vegetation used for resting
 - Primarily *Aedes albopictus*





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bacteria that dissolve the insects' guts. Local health departments are helping, too; many have hot lines, and some are supplying



GOTCHA: California's Kramer traps mosquitoes, then sends them to the lab for West Nile testing

borne plague

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CHPPM WNV Surveillance Guide:

<http://chppm-www.apgea.army.mil/ento/westnile.htm>