

VIRGINIA ARBOVIRAL ACTIVITY IN 2006

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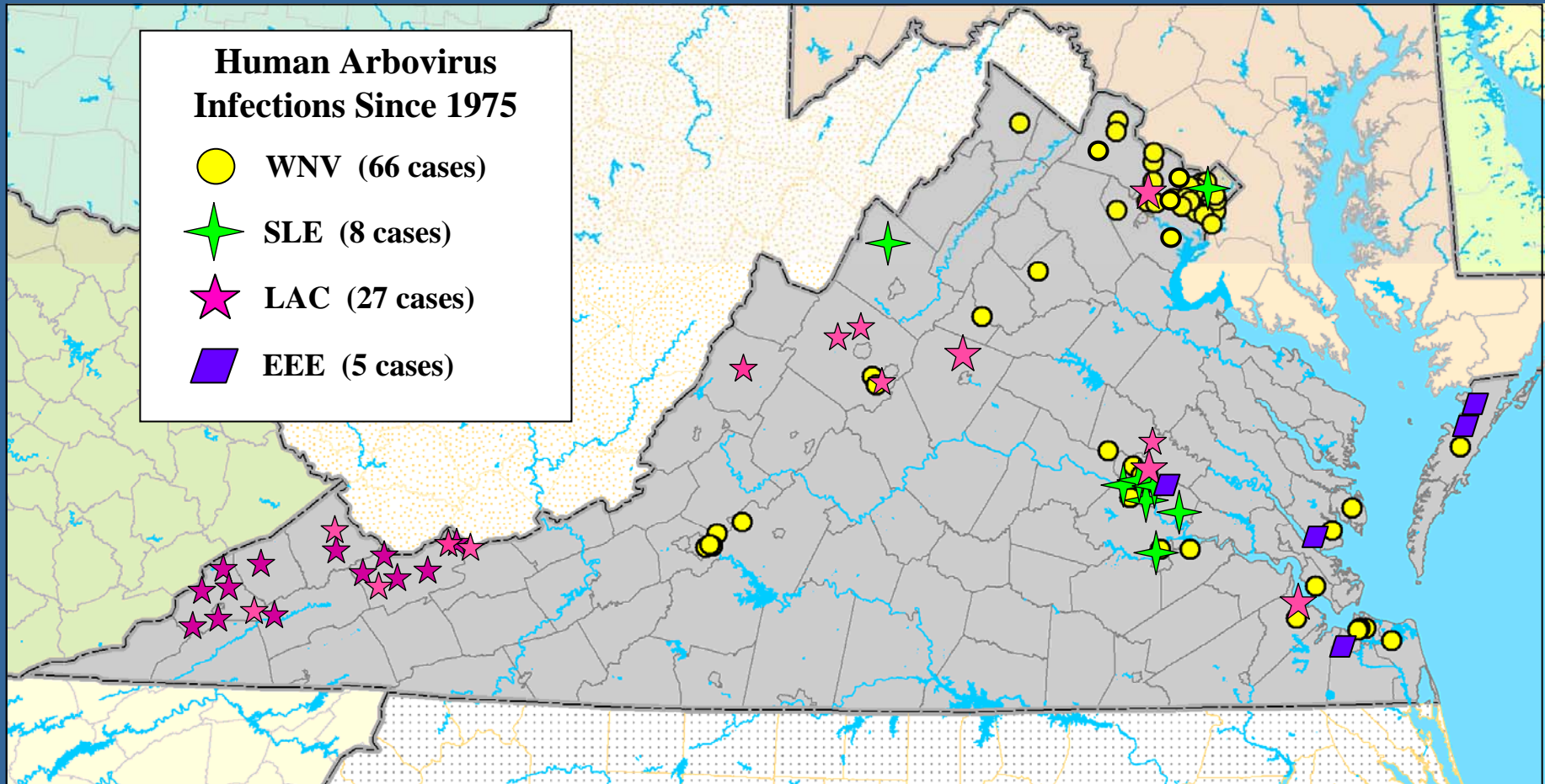


**30 YEAR HISTORICAL
PERSPECTIVE OF
HUMAN ARBOVIRAL
INFECTIONS IN
VIRGINIA**

Human Arbovirus Cases Recorded in Virginia Since 1975 (number of cases per 5 - year period)

	1975 to 1979	1980 to 1984	1985 to 1989	1990 to 1994	1995 to 1999	2000 to 2004	30 YEAR TOTAL
Eastern Equine Encephalitis (EEE)	2			1	1	1	5
LaCrosse Encephalitis (LAC)			1	1	12	9	23
St. Louis Encephalitis (SLE)	5			1	1	1	8
West Nile Virus (WNV)						60	60

Geographic Distribution of Human Arbovirus Cases Recorded in Virginia from 1975 to Present.

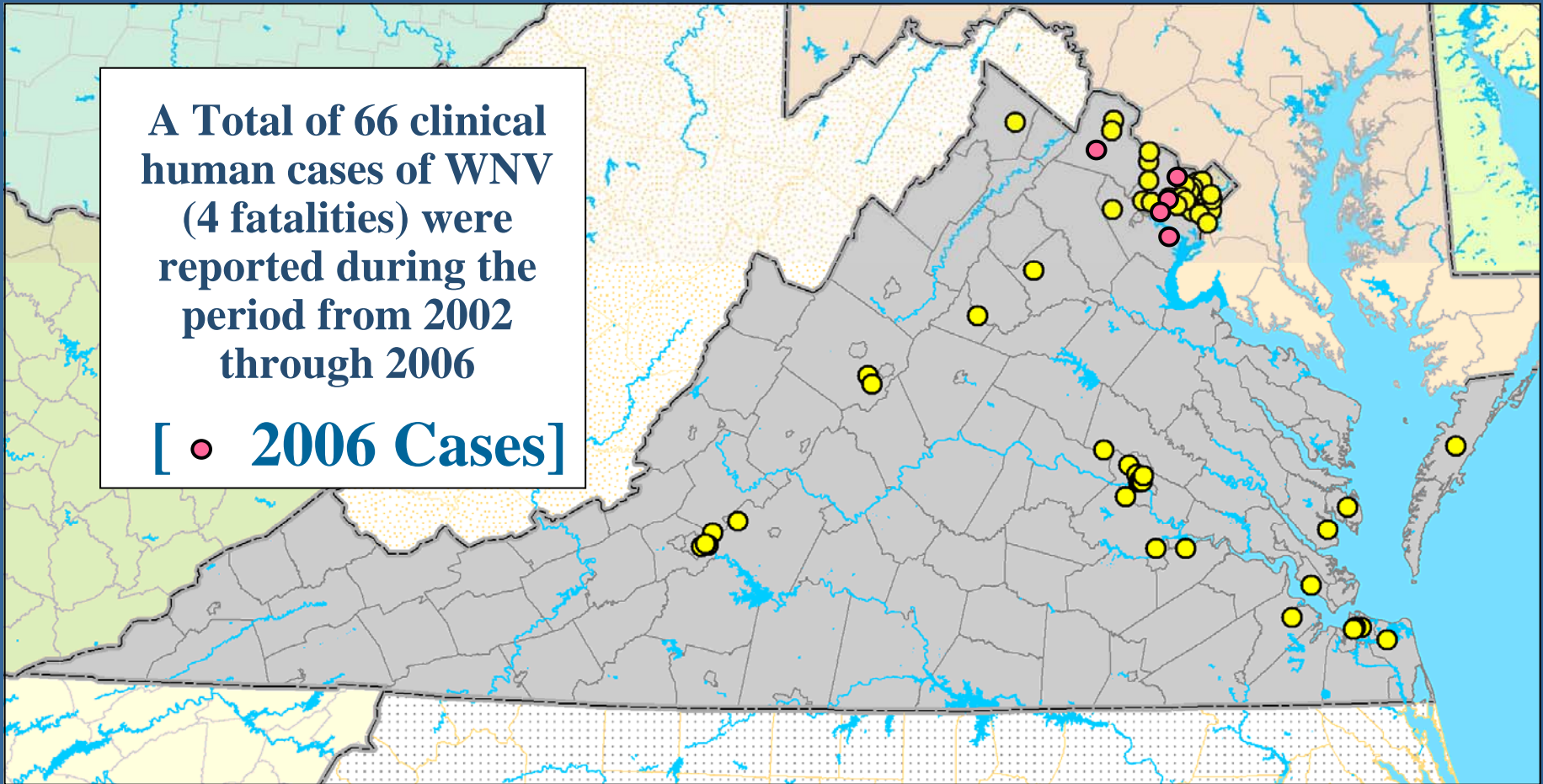


WEST NILE VIRUS IN VIRGINIA IN 2006

Geographic Distribution of Human West Nile Virus Cases Recorded in Virginia Since 2002

A Total of 66 clinical human cases of WNV (4 fatalities) were reported during the period from 2002 through 2006

[● 2006 Cases]



West Nile Virus Surveillance Indicators Used in Virginia from 2001 through 2006

	2001	2002	2003	2004	2005	2006
Human Clinical Cases (65 Total)	0	29	26	5	1	5
Asymptomatic WNV Positive Blood Donors	-	-	3	0	0	7
Wild Bird Surveillance	212	932	1,041	25	16	3
Sentinel Chicken Surveillance	1 flock 1 bird	6 flocks 10 birds	21 flocks 54 birds	18 flocks 29 birds	6 flocks 7 birds	5 flocks 6 birds
Equine (veterinary) Surveillance	6	48	234	15	1	1
Mosquito Surveillance (positive pools)	1	223	432	430	313	564

A total of 498,873 mosquitoes (13,891 pools) were tested for WNV in Virginia in 2006.

	Mosquito Species	Pools Tested	Mosquitoes tested	PCR Positive	MIR	PCR Equivocal
1	<i>Cx. (pip. + res.)</i>	6,368	198,228	525	2.65	25
2	<i>Cs. mel.</i>	3,446	157,957	7	0.04	
3	<i>Oc. atl./tor.</i>	715	32,265			
4	<i>Cx. sal.</i>	789	29,608			
5	<i>Ae. albo.</i>	1,080	27,526	9	0.33	12
6	<i>Ae. vex.</i>	531	21,953	8	0.36	1
7	<i>Cx. err.</i>	522	18,073	9	0.50	4
8	<i>Cq. per.</i>	102	3,648			
9	<i>Cx. spp.</i>	103	1,807			1
10	<i>An. qua.</i>	41	1,684			
11	<i>Oc. inf.</i>	41	1,613			
12	<i>An. cru.</i>	40	1,610			
13	<i>Oc. cana.</i>	18	660			
14	<i>An. punc.</i>	13	354	1	2.82	
15	<i>Oc. tris.</i>	20	279			
16	<i>An. spp.</i>	10	253			1
17	<i>An. cru./bra.</i>	6	205			
18	<i>Oc. tae.</i>	5	197			
19	<i>Oc. sol.</i>	5	170			
20	<i>Ps. col.</i>	4	109			
21	<i>Oc. jap.</i>	12	69			
22	<i>Oc. triv.</i>	1	33			
23	<i>Ps. spp.</i>	1	32			
24	Unidentified	18	540	5	9.26	
	TOTAL	13,891	498,873	564		44

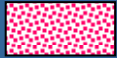
In 2006, only 34% of the mosquitoes tested for WNV in Virginia came from Northern Virginia, but 88% of the WNV positive pools were came from there.

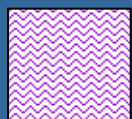
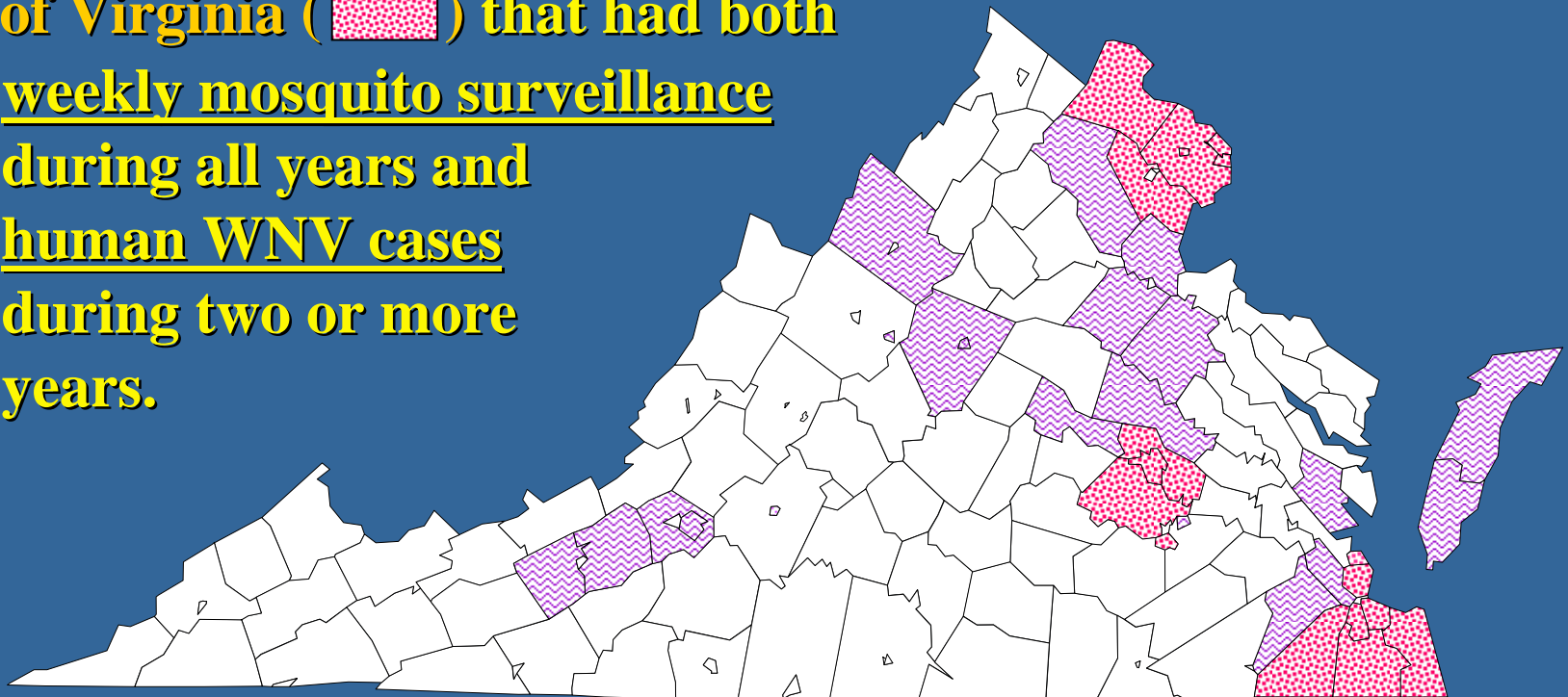
	Mosquito Species	Pools Tested	Mosquitoes tested	PCR Positive	MIR
1	<i>Cx. (pip.+ res.)</i>	4173	128,029	462	3.61
2	<i>Ae. vex.</i>	372	16,139	8	0.50
3	<i>Ae. albo.</i>	536	14,661	9	0.61
4	<i>Cx. err.</i>	195	5,876	9	1.53
5	<i>Cx. spp.</i>	103	1,807		
6	<i>An. qua.</i>	13	573		
7	<i>An. punc.</i>	13	354	1	2.82
8	<i>An. spp.</i>	10	253		
9	<i>Cq. per.</i>	6	238		
10	<i>Oc. tris.</i>	12	164		
11	<i>Cx. sal.</i>	4	127		
12	<i>Ps. col.</i>	6	109		
13	<i>Oc. jap.</i>	12	69		
14	<i>Oc. triv.</i>	1	33		
15	<i>Ps. spp.</i>	3	32		
16	<i>An. cru.</i>	2	18		
17	Unidentified	17	510	5	9.26
	TOTAL	5,478	168,992	494	

*** Mosquito data are combined from the Northern Virginia jurisdictions of Alexandria, Arlington Co., Fairfax Co., Loudoun Co. and Prince William Co.**

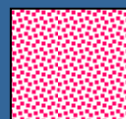
**Using Minimum (Mosquito)
Infection Rates to Compare
the Yearly Severity of WNV
Activity from
2002 Through 2006**

Areas of Virginia where Mosquito Surveillance was Conducted for West Nile Virus since 2002

In the period from 2002 – 2006, statewide, weekly MIRs were estimated from data that came from three regions of Virginia () that had both weekly mosquito surveillance during all years and human WNV cases during two or more years.

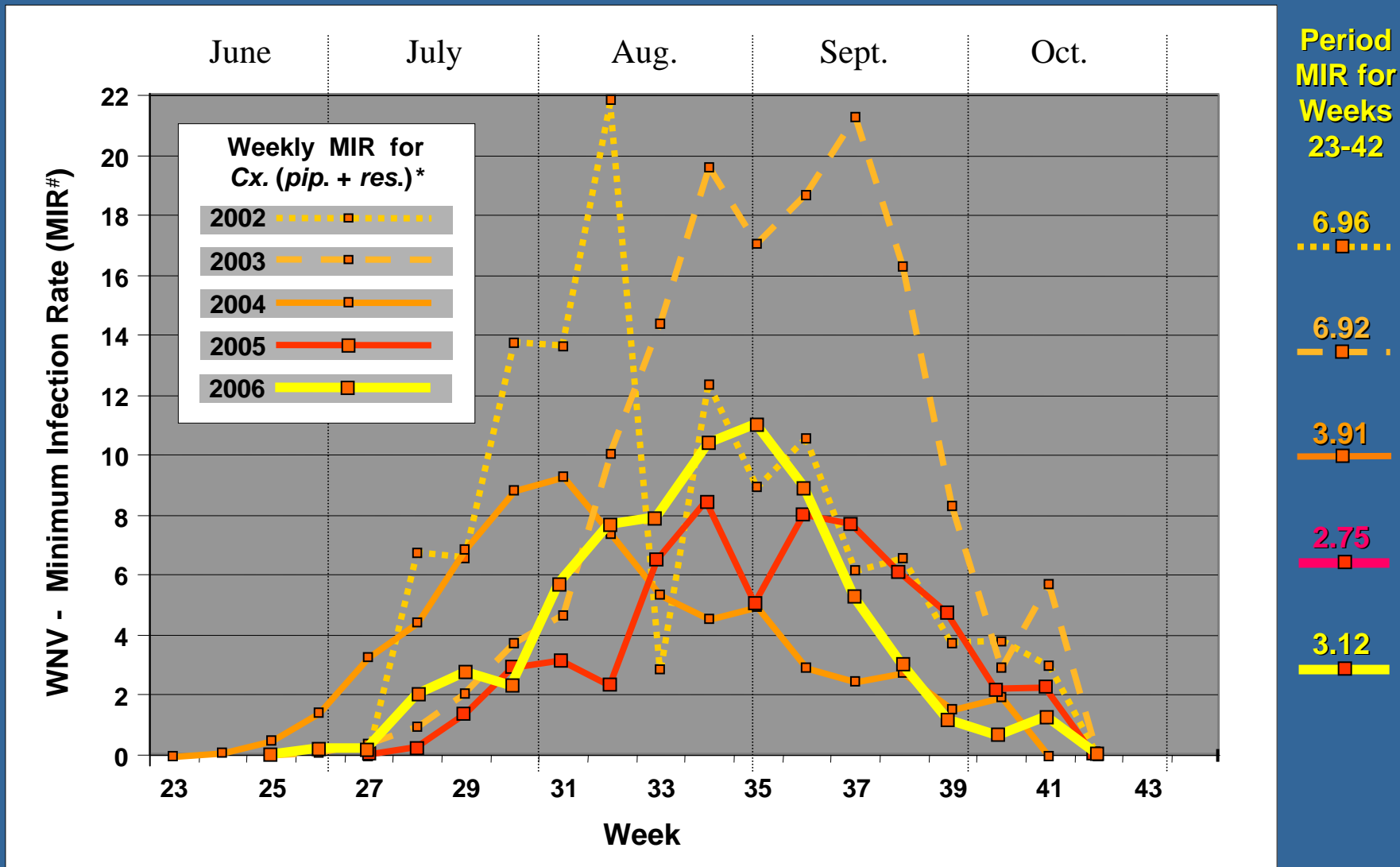


Occasional / short-term mosquito surveillance



Weekly / seasonal mosquito surveillance

Weekly WNV minimum (mosquito) infection rate (MIR) for *Cx. (pipiens + restuans)* in Virginia on weeks 23 - 44 of 2002 through 2006.



MIR = The minimum number of WNV positive mosquitoes in 1,000 tested .

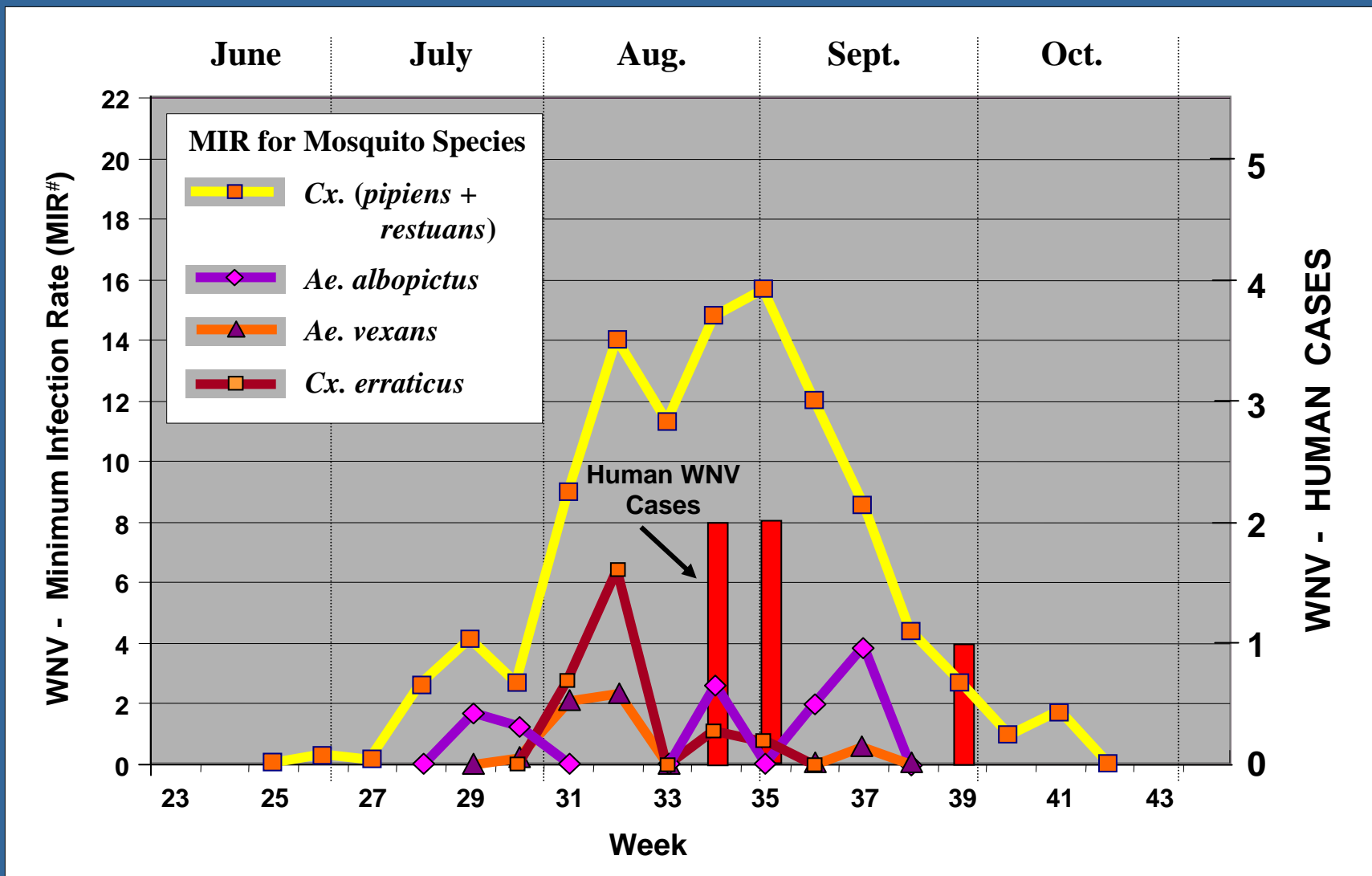
* *Culex (pipiens + restuans)* data are from Northern Virginia, the Richmond Area and Tidewater Area jurisdictions.

Yearly Number of WNV Clinical Human Cases Compared to Mosquito Minimum Infection Rate Data in Each Year

	2002	2003	2004	2005	2006
WNV - Clinical Human Cases	29	26	5	1	5
Minimum Infection Rate (MIR) for <i>Culex (pipiens + restuans)</i> Mosquitoes During the Period from Week 23-42	6.96	6.92	3.91	2.75	3.12
First MIR Peak (infection rate)	21.9	20.3	9.3	8.5	11.0
Week of First MIR Peak	32	34	31	34	35

2006 West Nile Virus Activity in Bridge Vector Species

WNV detected in *Cx. (pipiens + restuans)* and bridge vector species in Northern Virginia, and human cases in 2006.



* Mosquito data are combined from the Northern Virginia jurisdictions of Alexandria, Arlington Co., Fairfax Co., Loudoun Co. and Prince William Co.

**EASTERN EQUINE
ENCEPHALITIS
IN VIRGINIA IN 2006**

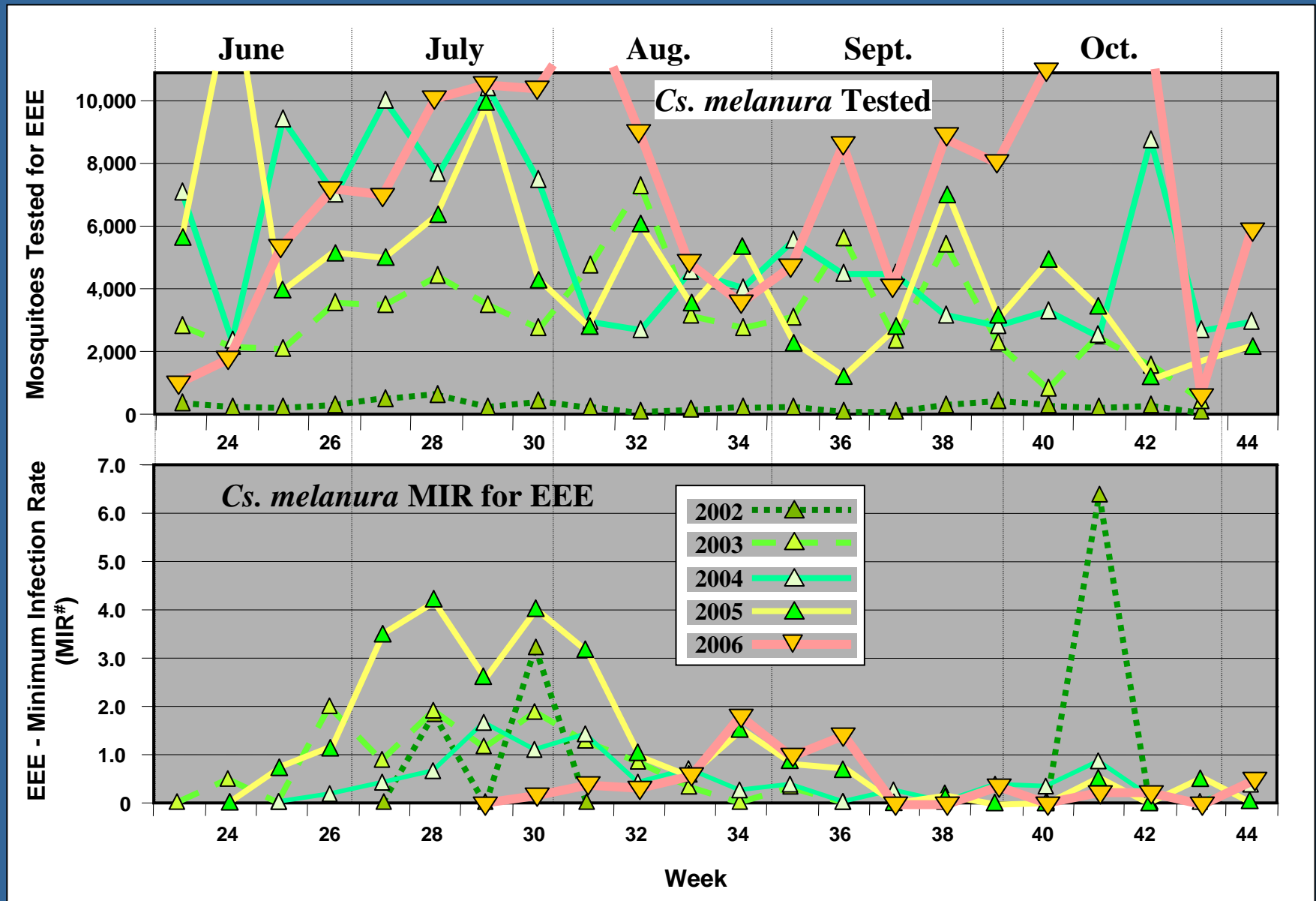
Virginia EEE Positive Totals, 2001 through 2006

	2001	2002	2003	2004	2005	2006
1. Humans:	0 cases	0 cases	1 case (1 death)	0 cases	0 cases	0 cases
2. Sentinel Chickens:	2 flocks 4 birds	1 flock 1 bird	10 flocks 27 birds	12 flocks 16 birds	27 flocks 94 birds	12 flocks 18 birds
3. Horses:	7	0	9	7	6	0
4. Mosquito Pools:	30	10	43	53	131	53

A total of 300,674 mosquitoes (7,042 pools) were tested for EEE in Virginia in 2006.

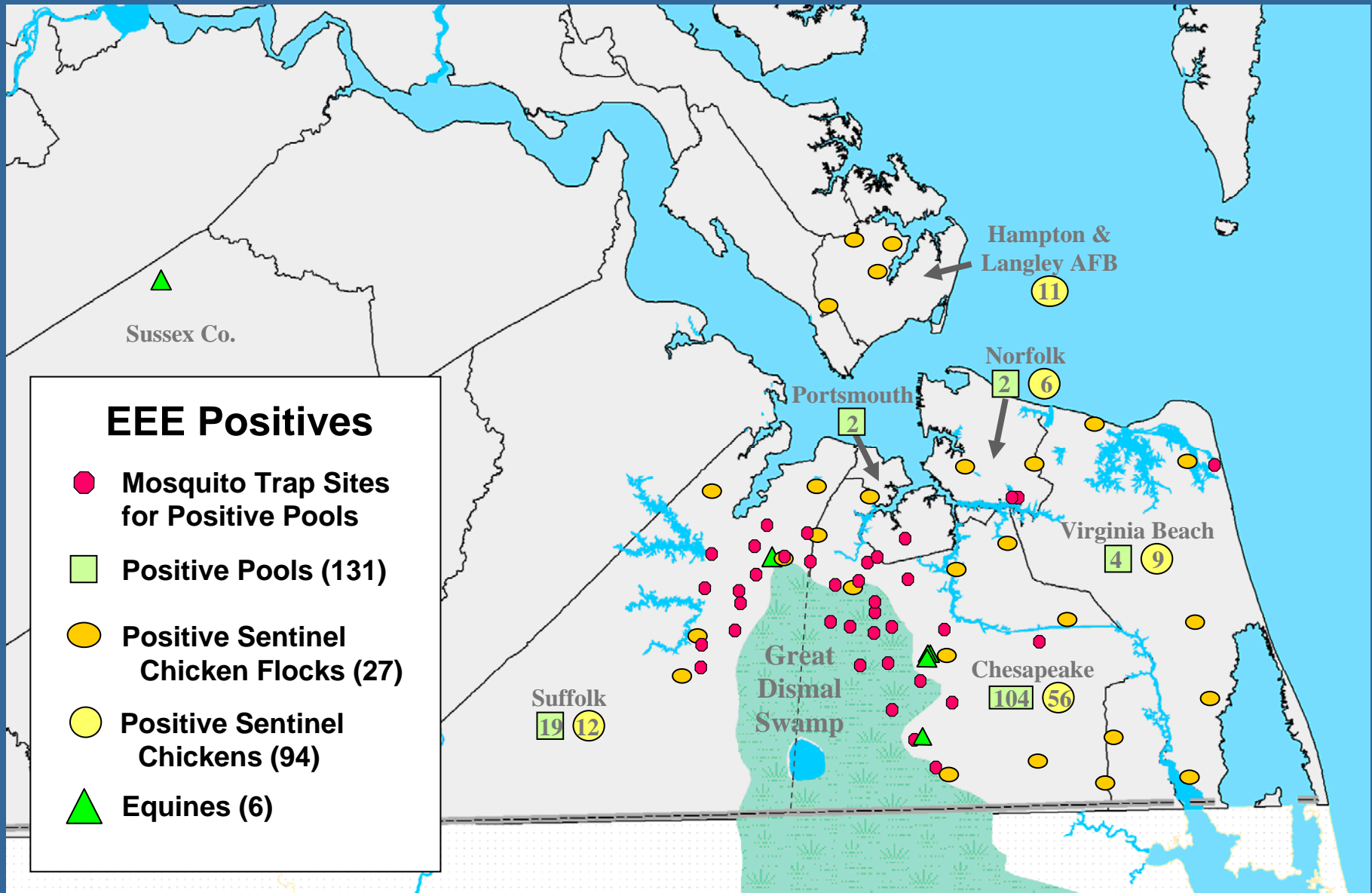
	Mosquito Species	Pools Tested	Mosquitoes tested	PCR Positive	MIR	PCR Equivocal
1	<i>Cs. mel.</i>	3,916	178,272	51	0.29	
2	<i>Oc. atl./tor.</i>	706	31,949	2	0.06	
3	<i>Cx. sal.</i>	776	29,279			
4	<i>Cq. per.</i>	452	18,992			
5	<i>An. cru.</i>	302	12,541			
6	<i>Cx. err.</i>	249	8,951			
7	<i>Ae. albo.</i>	273	7,398			
8	<i>Ae. vex.</i>	127	4,908			
9	<i>Cx. pip.</i>	82	2,662			
10	<i>An. qua.</i>	44	1,839			
11	<i>Oc. inf.</i>	41	1,613			
12	<i>Cx. res.</i>	28	734			
13	<i>Oc. cana.</i>	17	614			
14	<i>An. cru./bra.</i>	6	205			
15	<i>Oc. tae.</i>	5	197			
16	<i>Oc. sol.</i>	5	170			
17	<i>Cx. pip./res.</i>	4	161			
18	<i>Ps. col.</i>	4	115			
19	<i>Oc. tris.</i>	4	44			
20	Unidentified	1	30			
	TOTAL	7,042	300,674	53		

Number of *Cs. melanura* tested, and weekly minimum infection Rate (MIR#) detected in Virginia's Hampton Roads region in 2005 vs. 2002, 03 and 04.



MIR = The minimum number of EEE positive mosquitoes present in 1,000 tested.

EEE activity detected in Virginia in 2005

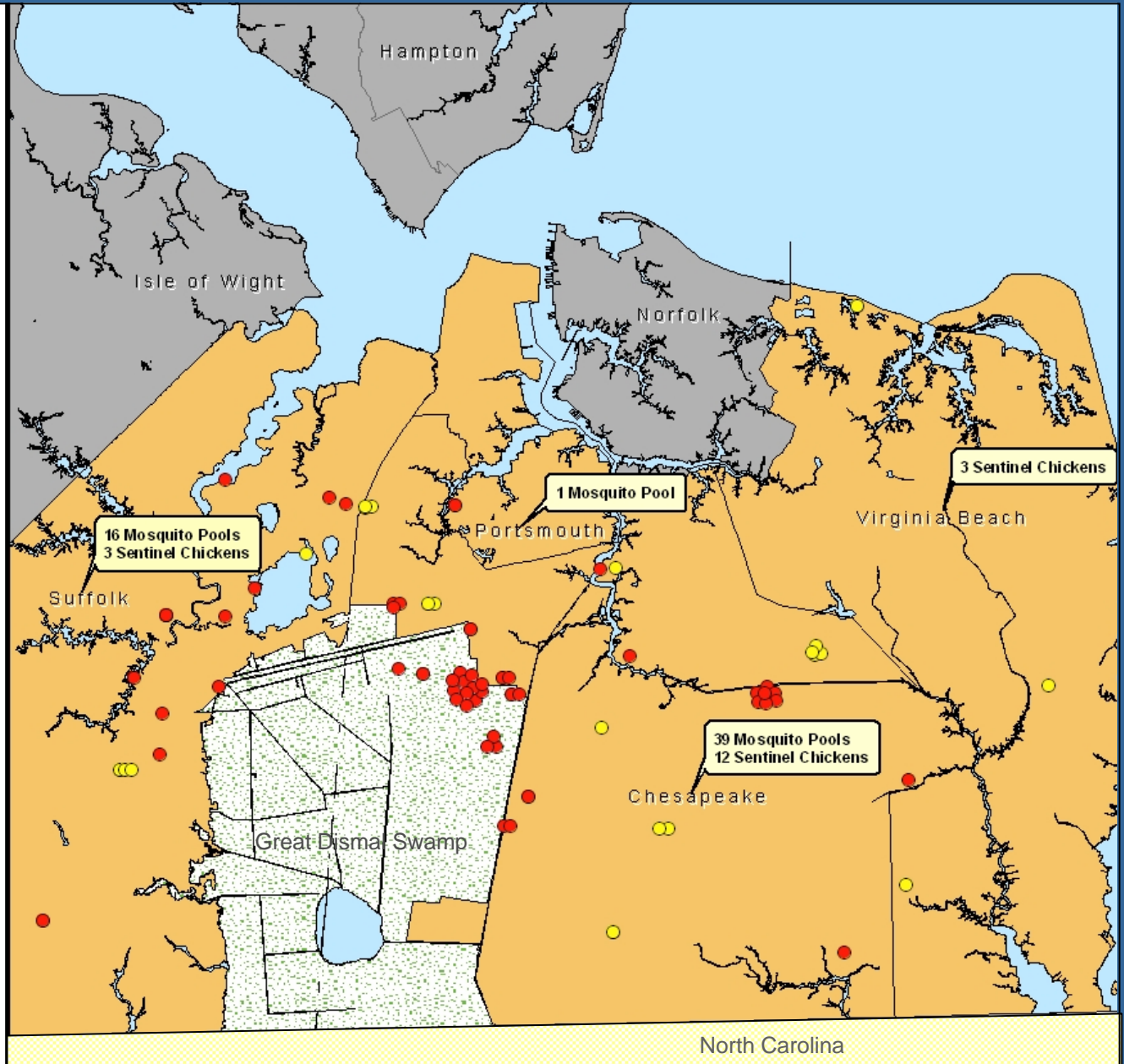


EEE Positives in 2006

Tidewater Regional
Arbovirus
Surveillance Team
(TRAST)

Legend

- EEE Positive Pool Location
- EEE Positive Chicken Location



Acknowledgements:

Laboratories:

Norfolk Department of Public Health Laboratory (NDPHL)

Virginia Dept. of Agriculture and Consumer Services (VDACS) - Veterinary Laboratories

Virginia Division of Consolidated Laboratory Services (DCLS) Laboratory

Surveillance Programs:

Alexandria Dept. of Health - Vector Control

Arlington County Dept. of Health - Vector Control

Chesapeake Commission for Mosquito Control

Clarke Mosquito Control Company

Fairfax County Dept. of Health - Vector Control

Hampton Vector Control

Henrico County Vector Control

Langley Air Force Base - Vector Control

Loudoun County Dept. of Health

Newport News Vector Control

Norfolk Dept. of Health - Vector Control

Portsmouth Vector Control

Prince William County Vector Control

Suffolk Vector Control

Virginia Beach Vector Control

Virginia Dept. of Health (VDH) - Division of Zoonotic and Environmental Epidemiology

VDH - Regional and District Epidemiologists