

California West Nile Virus Dead Bird and Sentinel Chicken Surveillance Programs

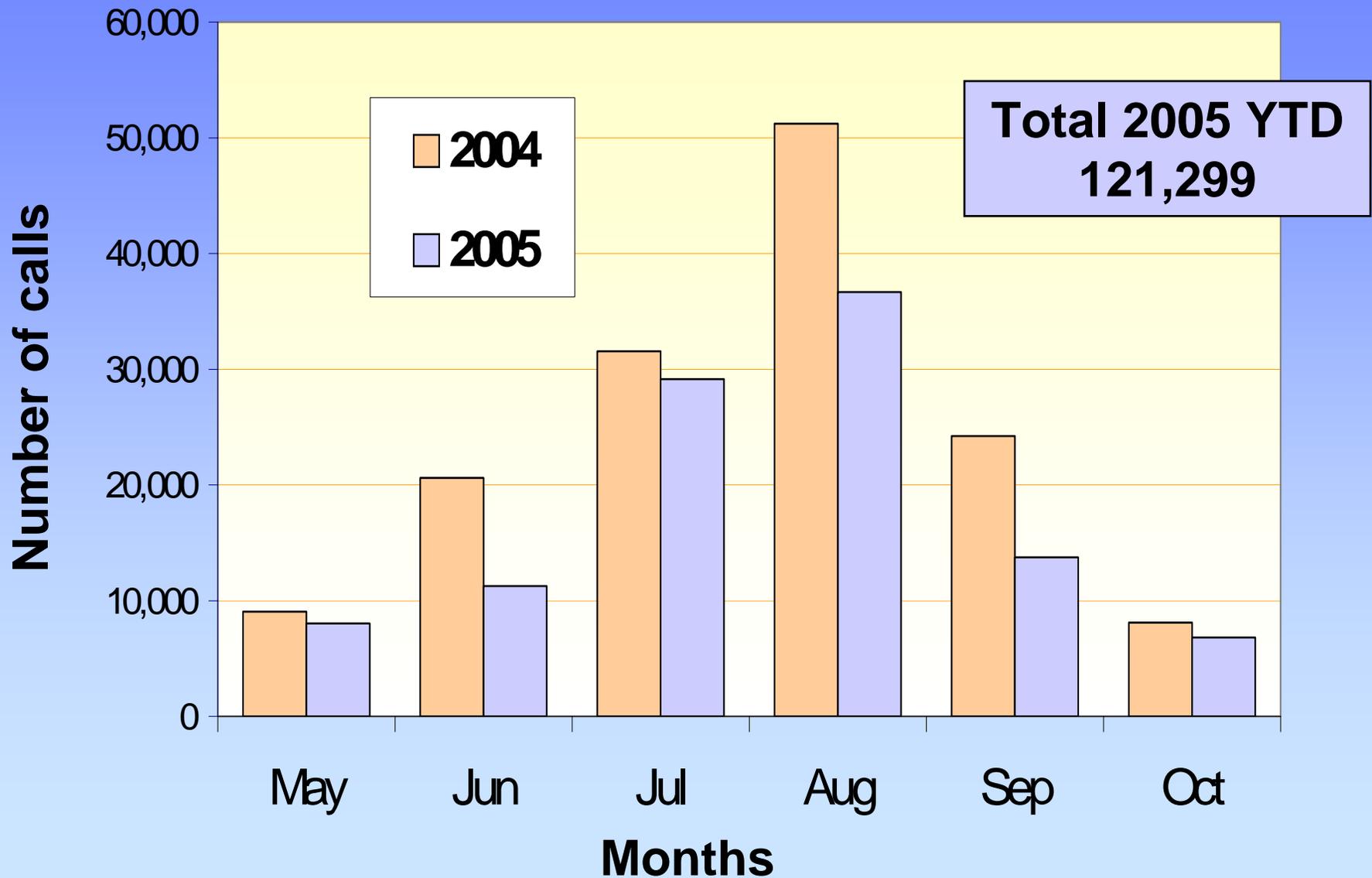
Review of 2005 and Plans for 2006

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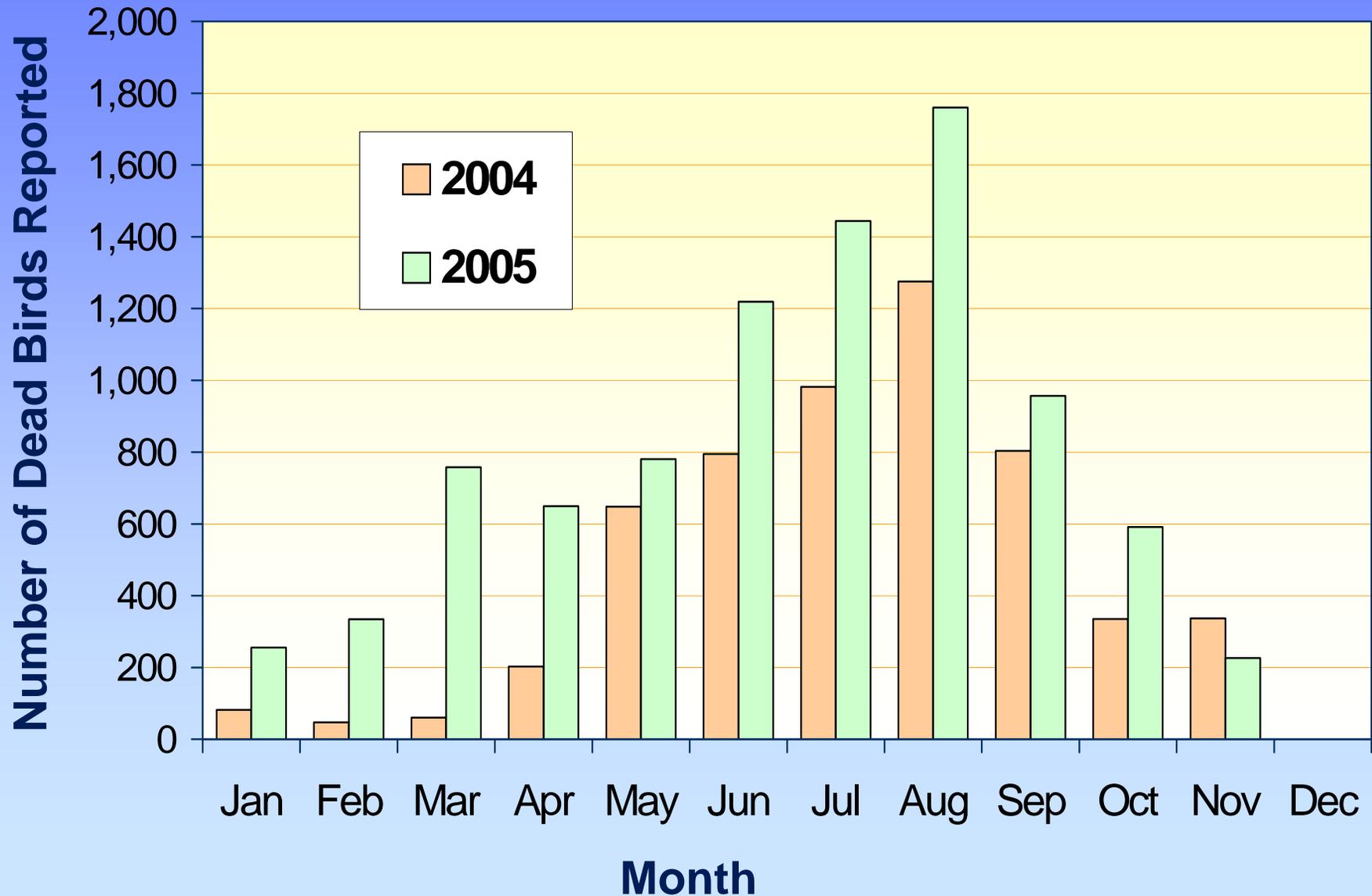
WNV Website

- The www.westnile.ca.gov website received over 3 million hits. Many additions and improvements. Updated twice weekly.
- Included weekly updated line graphs comparing 2004 and 2005 positive specimens for humans, mosquitoes, dead birds, and sentinel chickens.
- Thanks to Lauren Marcus, webmaster, for doing an exceptional job with the website.
- Special thanks to the CVEC staff for outstanding webserver host support.

WNV Hotline Calls 2004-2005



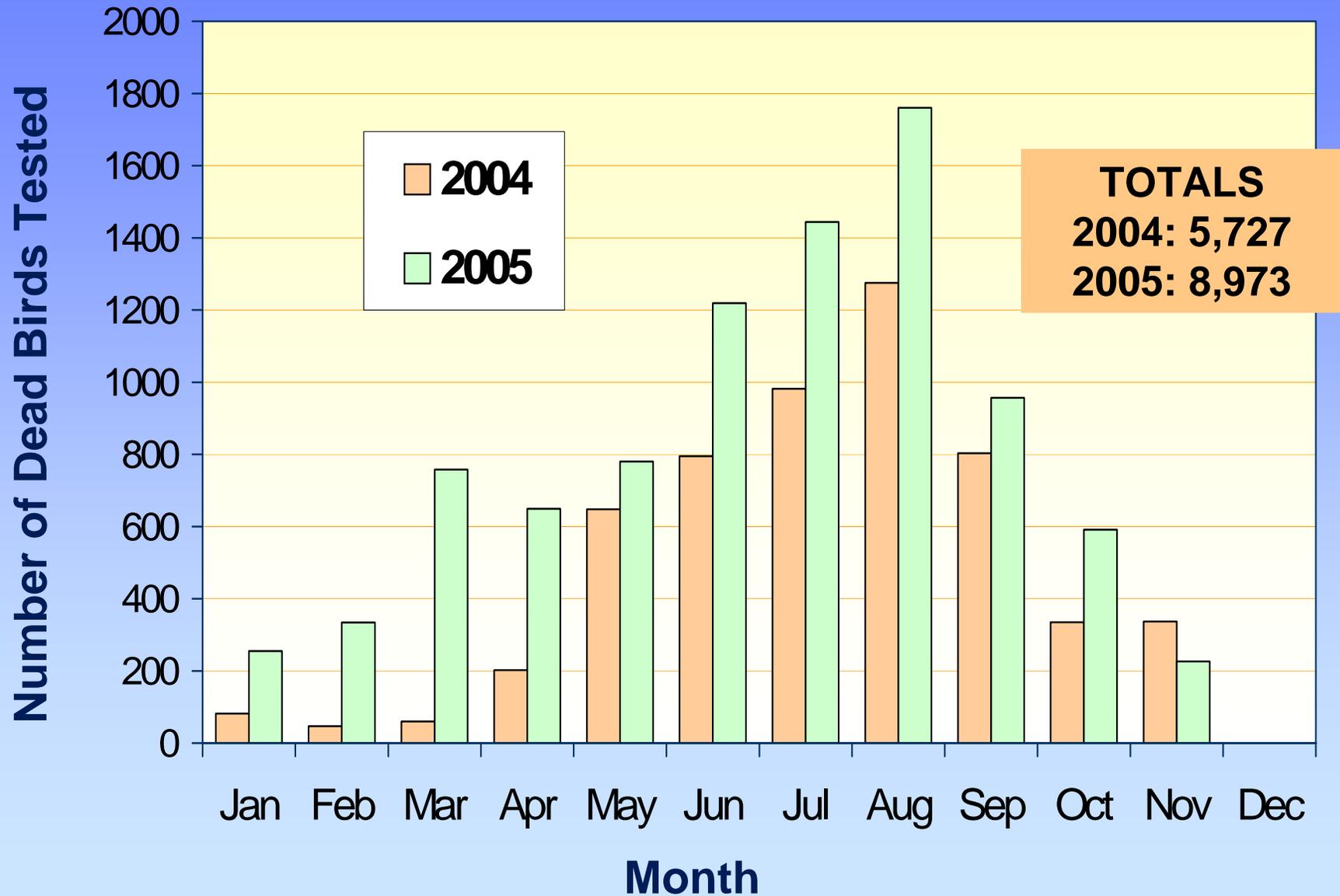
Dead Bird Reports 2004- 2005



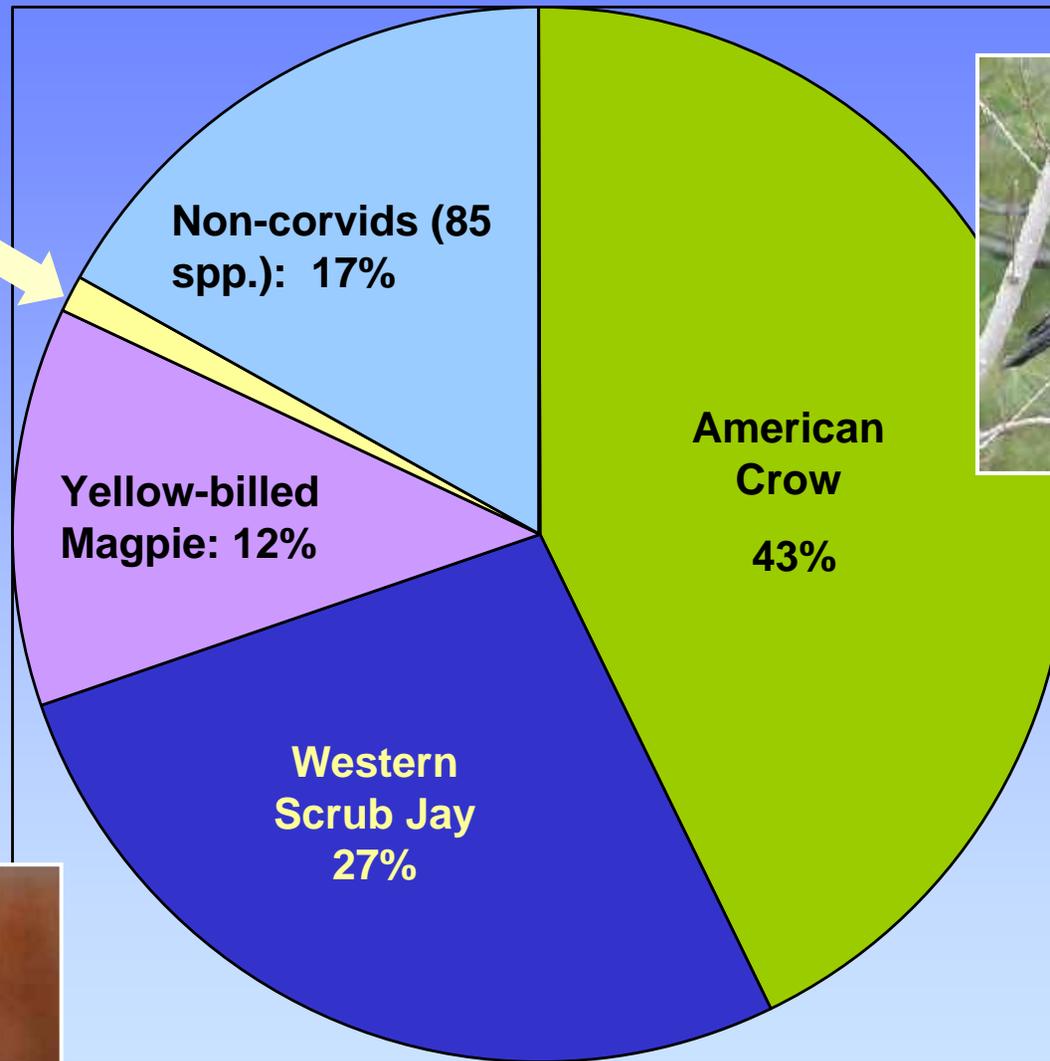
Top Ten Counties Reporting Dead Birds, 2005

Sacramento	16,574
Stanislaus	7,439
Fresno	7,093
Contra Costa	6,111
San Joaquin	5,274
Riverside	4,997
Los Angeles	4,919
Placer	4,373
Tulare	3,490
San Bernardino	3,298

Dead Birds Tested 2004- 2005



2005: 92 species of WNV positive dead birds

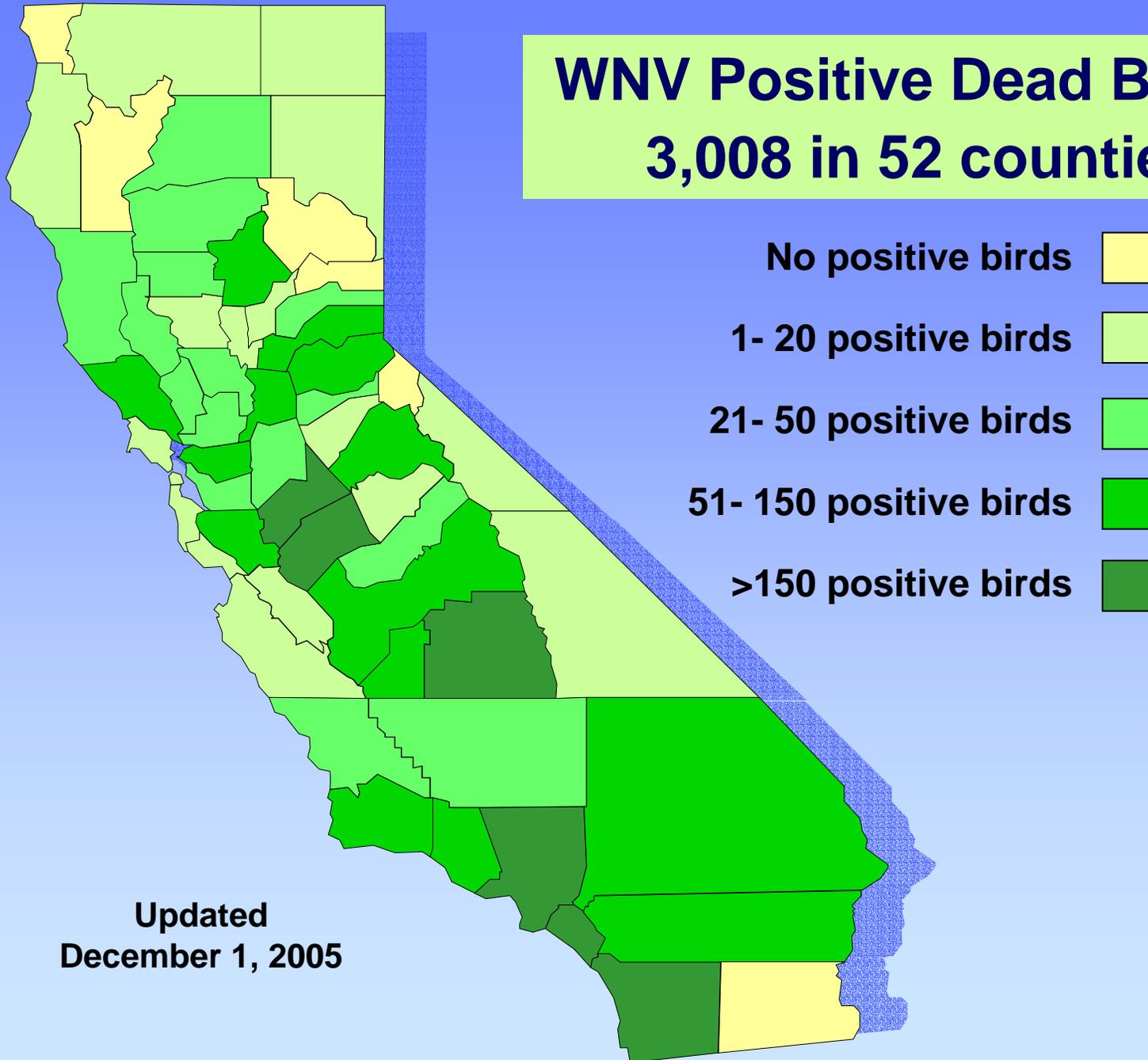


108,244 reported



Positive dead birds = 3,008
Number tested = 8,973 : 50% corvids (28% crow)

WNV Positive Dead Birds 3,008 in 52 counties

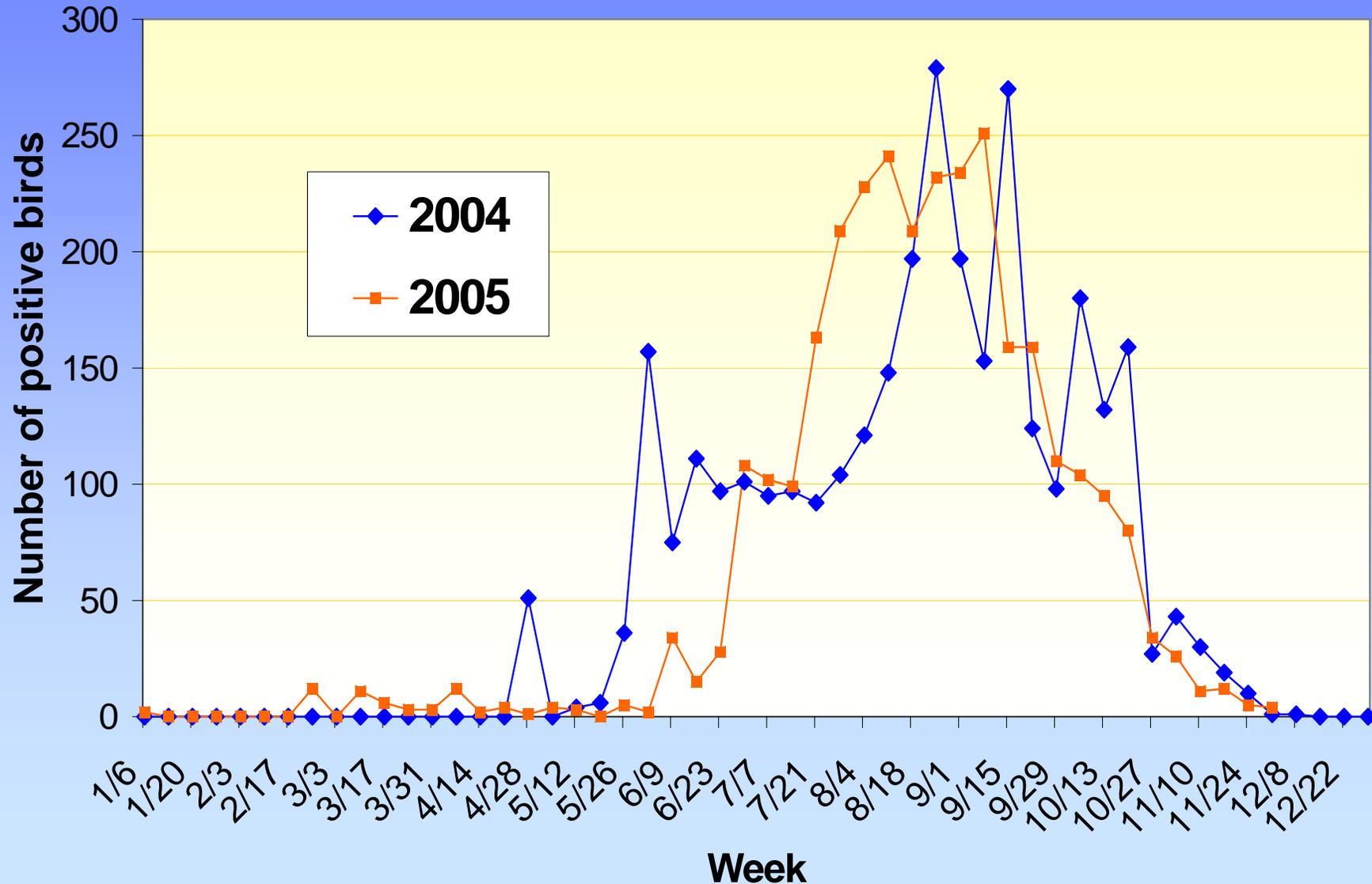


Updated
December 1, 2005

Top Ten Counties With WNV Positive Dead Birds, 2005

Orange	297
Stanislaus	229
Tulare	226
Merced	171
Los Angeles	163
San Diego	160
Santa Clara	140
Riverside	111
Fresno	97
Contra Costa	93

California WNV Positive Dead Birds 2004-2005



2005 Improvements

- **Weekly email sent to ALL stakeholders in EACH county on dead bird reports, submissions, positive birds, etc.**
- **Initiation of DYCAST (Dynamic Continuous-Area Space-Time system) to geo-code and map ALL dead bird reports for local agencies.**

DYCAST

- Modeling program that applies statistical and geographic analytical techniques to dead bird REPORTS to forecast times and places with an elevated risk of human WNV transmission
- Used in New York City and Chicago to predict risk of WNV infection in humans
- Pilot project in collaboration with the Center for Advanced Research in Spatial Information (CARSI) at Hunter College in New York

More on DYCAST

- **Goals**
 - identify and analyze dead bird clusters
 - determine lag time between peak bird deaths and human West Nile virus infection
 - predict times and places of human infection
 - prompt targeted mosquito control and public education campaigns

More 2005 Improvements

- **To encourage dead bird reporting, public message emphasized reporting of birds, regardless of suitability for testing**
- **Doubled hotline staff from 2004 and made effort to call back ALL voice mails (not possible from mid-June to mid-Sept)**
- **Updated permit agreement with Fish & Game to include public salvage of carcasses for delivery to local agencies**

2005 Improvements

- VecTest / RAMP test by local agencies for corvids**
 - 16 agencies used RAMP (increased from 14 in 2004)**
 - 34 agencies used VecTest (increased from 17 in 2004)**
 - Bench training was offered for these tests at four sites by DHS and CVEC**
 - 24% (719 / 2,998) of 2005 positive birds identified by VecTest or RAMP (not tested by RT-PCR)**
 - Testing by some county public health labs**

WNV in California

Tree Squirrels - 2005



- **First positive squirrel, Placer County (June 10, 2005)**
- **As of November 21, prevalence of WNV in tested tree squirrels was 31% (48 / 155)**
- **Comparable to prevalence in dead birds (35%)**

Plans for 2006

Personnel

- **Hire third full-time biologist.**
- **Make some hotline staff full-time, instead of relying solely on part-time students.**
- **During peak times, increase the number of hotline staff taking live calls to reduce reliance on voice mail.**

Plans for 2006

Database Management / Reporting

- **Switch to SQL to eliminate limitations of ACCESS program**
- **Automatically geo-code all dead bird reports when entered into database**
- **Enable local agencies to do queries on dead bird submissions by May (a tutorial will be written)**

Plans for 2006

Database Management / Reporting

- **Online reports (12,551 in 2005) will be automatically entered into a screening database instead of typed in by hotline staff**
- **By May, local agencies will be able to immediately record zip code closures in the database (tutorial will be written)**

Plans for 2006

- Statewide DYCAST human WNV risk maps will be generated daily from April 1 - Sep 31 and made available online for all agencies to view.
- Can be used as an early warning system and proxy for targeted mosquito control and public education campaigns
- Notify public about testing tree squirrels

Tree Squirrels – WNV Surveillance

- **Advantages**



- **Similar WNV prevalence as birds (2004 & 2005)**
- **Peridomestic**
- **Small home range (don't fly!)**
- **Potential reservoir**

- **Disadvantage**

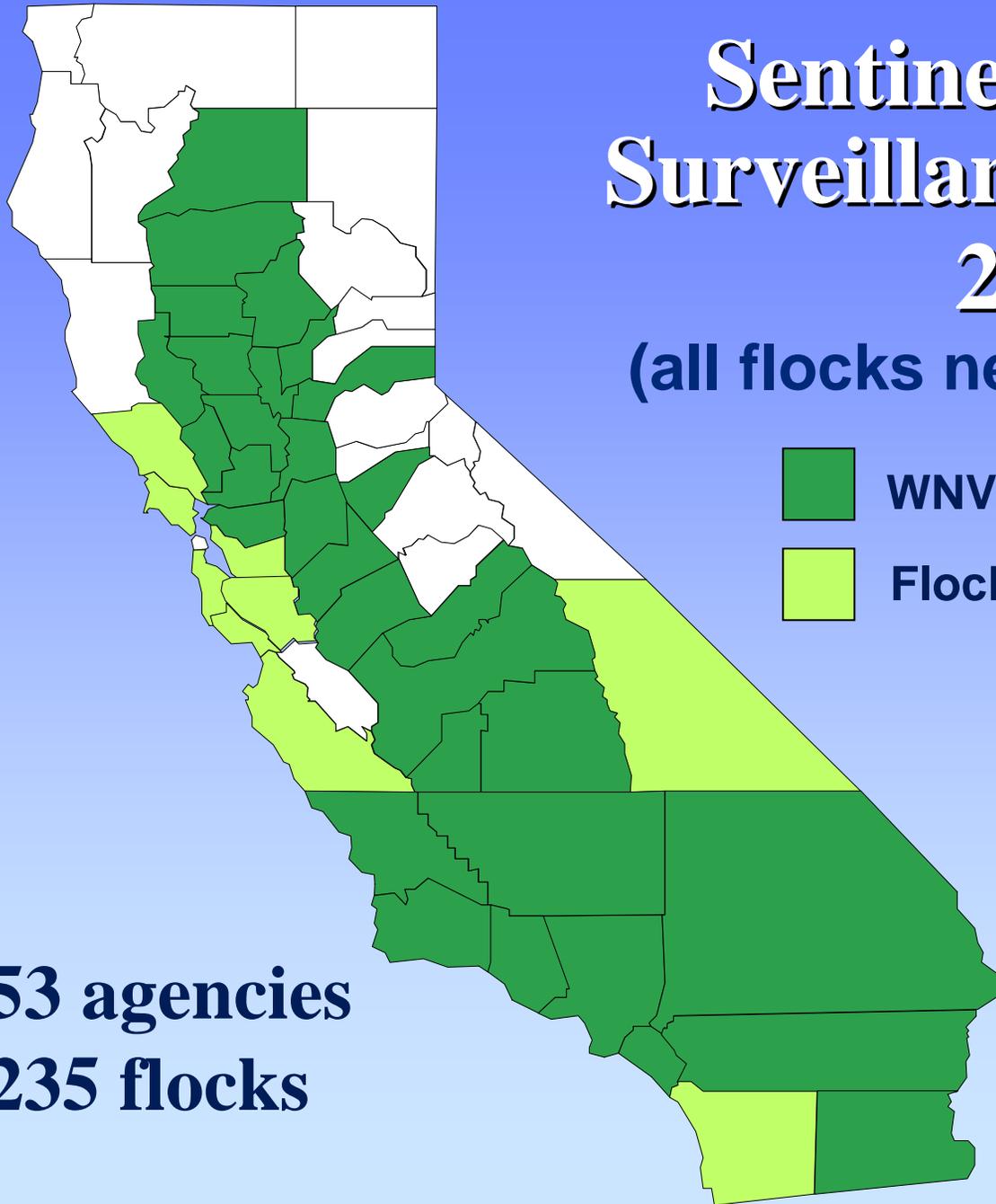
- **Should be handled by vector agency personnel, not by public (zoonotic disease risk)**

Sentinel Chicken Surveillance Program 2005

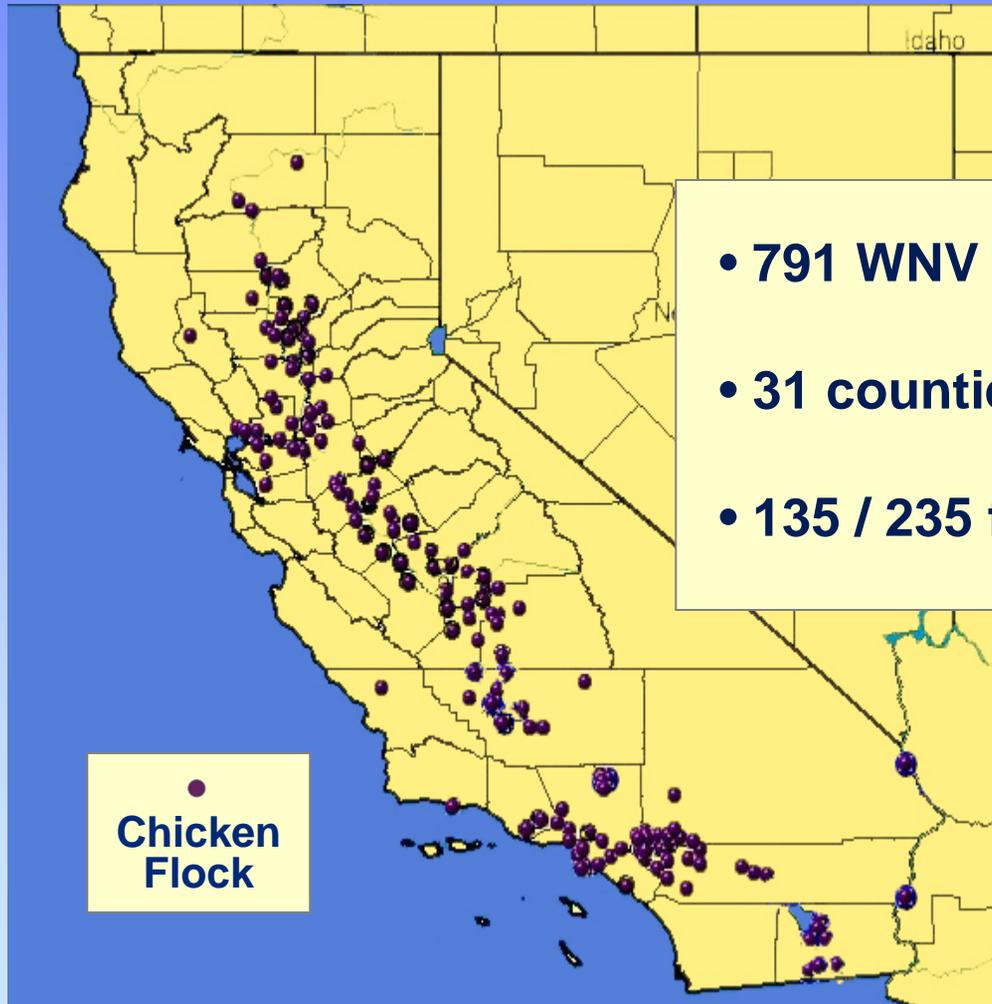
(all flocks negative for SLE)

-  WNV seroconverted flocks
-  Flocks negative for WNV

53 agencies
235 flocks

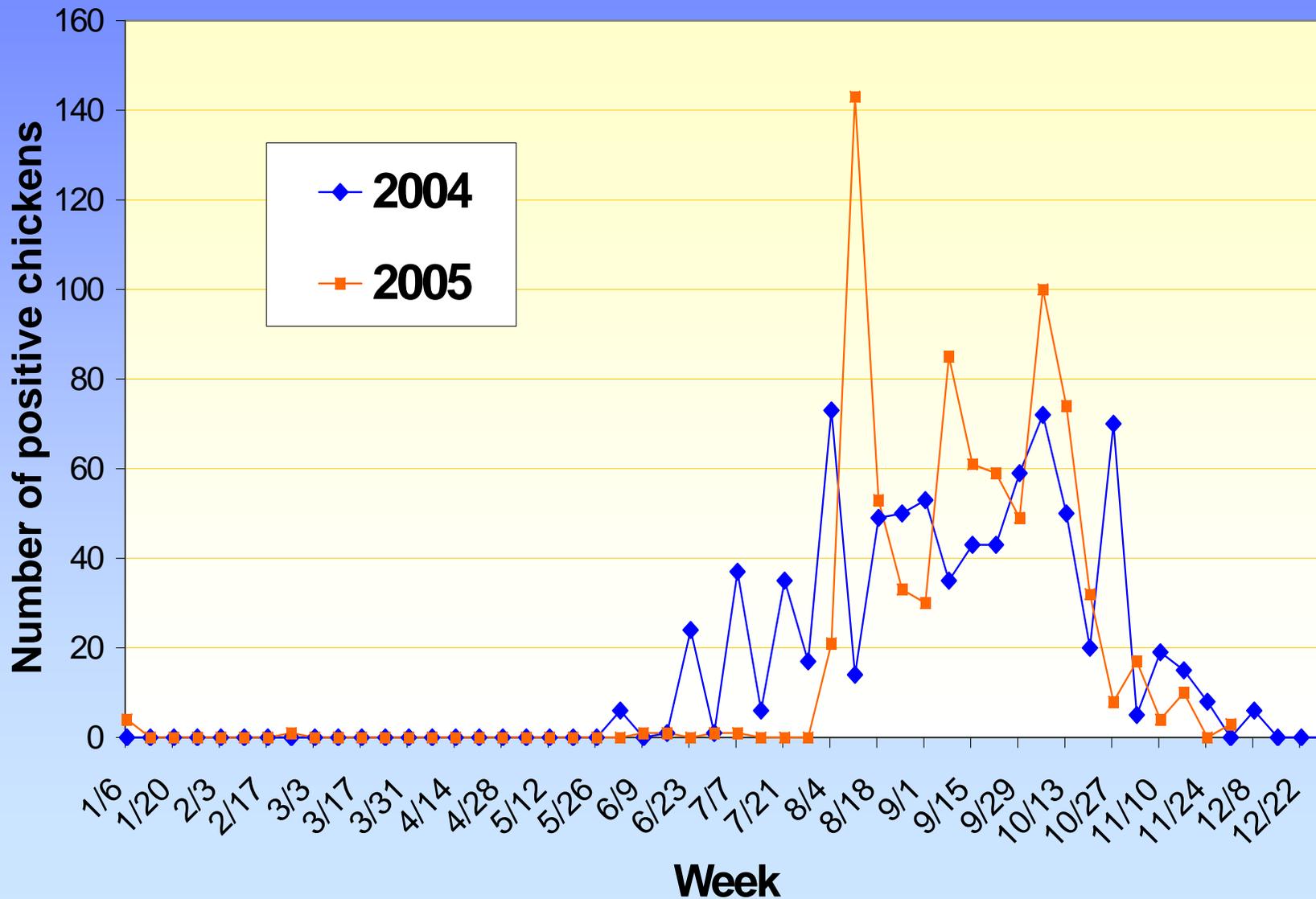


Sentinel Chicken WNV Seroconversions in 2005



- 791 WNV seroconversions
- 31 counties with seroconversions
- 135 / 235 flocks seroconverted

Sentinel Chicken WNV Seroconversions 2004 & 2005



Improvements in 2005

Notified local agencies of positive flavivirus from filter paper rather than waiting until WNV confirmed from whole blood. Typical turnaround was one week for filter paper results.

Improvements in Confirmatory (Neutralization) Testing

**by the DHS Viral and Rickettsial Disease
Laboratory in 2005**

- **Changed to a testing format that produced a much higher throughput of serology confirmatory samples.**
- **Used a test which took less time than the plaque-reduction neutralization tests used in previous years.**

Problems in 2005

- On two occasions in August, the serology test for SLE failed. This required testing to be rerun, and delayed confirmatory reporting an extra week.
- There was double reporting of some samples that were both flavivirus and WNV positive.

Plans for 2006

- **Alter some agency biweekly submission schedules, so that VRDL gets about the same number of filter paper samples each week.**
- **When the first chicken in a flock is flavivirus positive (Fv+), local agencies should send in a whole blood sample.**
- **If there is more than one Fv+ seroconversion in a flock, send no more than two whole bloods for confirmatory testing.**

Plans for 2006

- Once a flock has one confirmed WNV + chicken, subsequent Fv+ sera from that flock should be considered WNV positive.
- Agencies should consider removing chickens that have seroconverted to WNV and replacing them when at least half the flock has seroconverted.

Acknowledgments

MVCAC and local health departments

VRDL serology staff

CVEC laboratory staff

CVEC computer staff

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**VBDS Staff in Richmond and throughout
California**