

# Sentinel Chickens Challenges and Solutions

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# Chicken WNV seroconversions in 2004



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- 805 seroconversions
- 22 counties with seroconversions
- 143/231 flocks seroconverted

# Issues & challenges faced in 2004

**Issue:** To efficiently direct mosquito control activities, local agencies indicated a shorter turn-around time would be helpful.

**Proposed solutions:**

- Preliminary results to be reported to local agencies for early warning. Note that these results are “non-specific”, “probable flavivirus”, or possible false-positive, not confirmed WNV seroconversions.

# Issues & challenges faced in 2004

- For confirmation testing, local agencies will be requested to provide whole chicken sera within 2-3 days of preliminary result notification.
- Quickest turn-around time achieved if sera received before Monday.
- After initial WNV seroconversion in a flock, agencies may opt to collect confirmatory sera at next scheduled bleeding.
- Confirmatory testing is critical to distinguish WNV and SLE infection.

# Outstanding issues to be addressed before 2005 season

To facilitate confirmatory sera collection, microtainers, instead of vacutainers (for sample collection from the comb), will be provided.



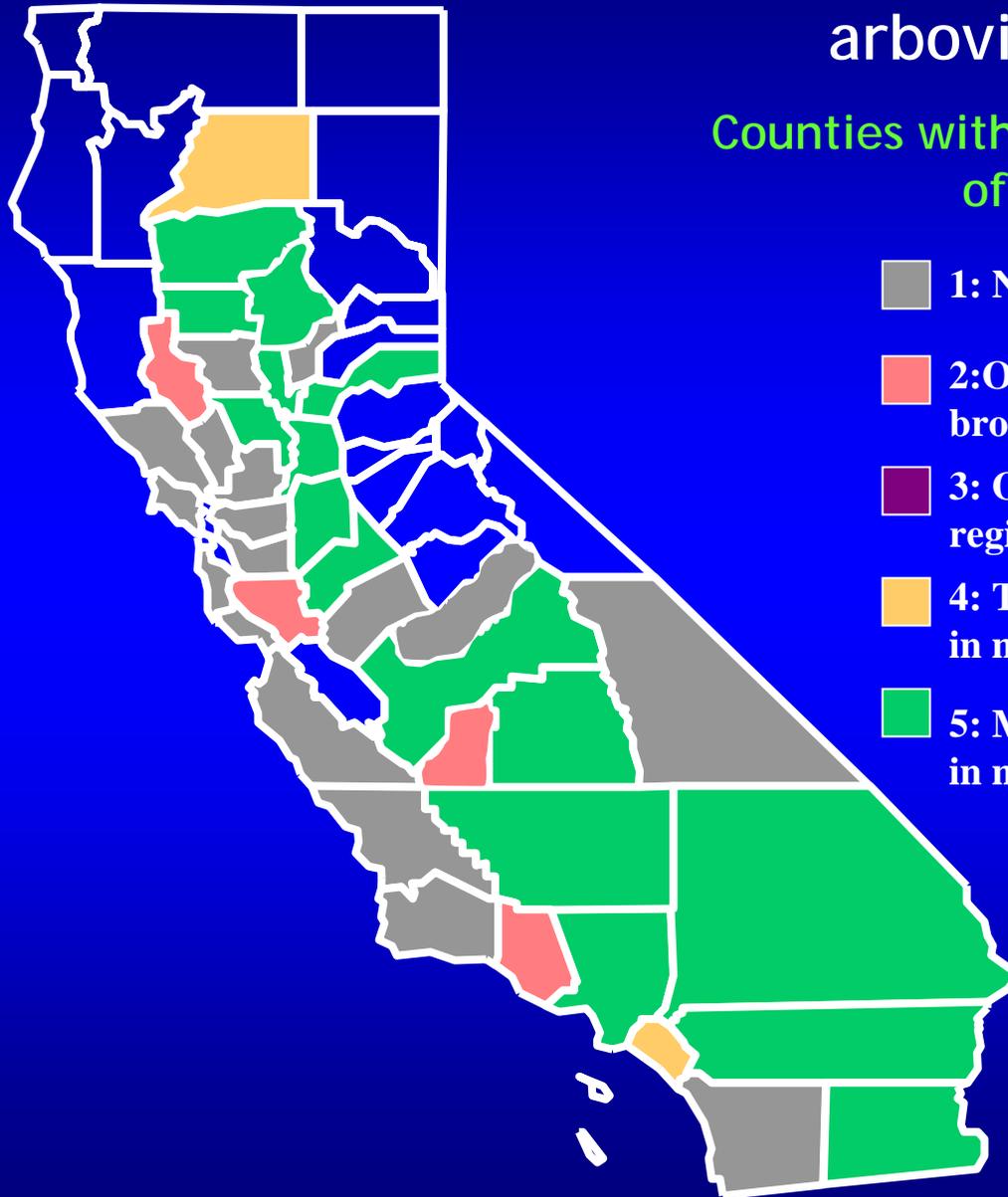
# Importance of the sentinel chicken surveillance program:

## As a key factor in the Arbovirus Response Plan

Surveillance Factor	Value	Benchmark
Sentinel chicken WNV seroconversion 	1	No seroconversion
	2	One seroconversion in single flock over broad area
	3	One seroconversion in multiple flocks in region
	4	Two to three seroconversions per flock in multiple flocks in region
	5	More than three seroconversions per flock in multiple flocks in region

# Sentinel Chicken Surveillance in arboviral response plan

Counties with a benchmark of  $\geq 1$  by end of September 2004



- 1: No seroconversion
- 2: One seroconversion in single flock over broad area (4 counties)
- 3: One seroconversion in multiple flocks in region (0 counties)
- 4: Two to three seroconversions per flock in multiple flocks in region (2 counties)
- 5: More than three seroconversions per flock in multiple flocks in region (16 counties)

# Importance of the sentinel chicken surveillance program:

As an epidemiological tool for monitoring WNV and other arboviruses in California

- Provides precise data on the location and time of viral transmission.
- Provides continuous detection of WNV activity throughout the season.

# Importance of the sentinel chicken surveillance program:

As an epidemiological tool for monitoring WNV and other arboviruses in California

- Detects WNV activity in locations where dead bird and/or mosquito surveillance is not practical or performed.
- Detects presence of St. Louis encephalitis and Western equine encephalomyelitis, unlike dead birds that only detect WNV.

# Importance of the sentinel chicken surveillance program:

## Compared with other surveillance tools

- When the arboviral prevalence is low, sentinel chickens more sensitive tool than mosquito testing.
  - Chickens “collect” mosquito bites.
  - With  $MIR \leq 1.0$ , then  $\geq 1,600$  mosquitoes/week/site needed to detect virus\*
- When arboviral prevalence increases, sentinel chicken seroconversion and positive mosquito pools may occur together (e.g. 1993 WEE activity in Sacramento Valley)

\*(Gu and Novak, Am. J. Trop. Med. Hyg. 2004. 71(5):636-638)

# Importance of the sentinel chicken surveillance program:

## Compared with other surveillance tools

No single surveillance tool is “the best”. Need to combine and consider information from all sources.