



BC Centre for Disease Control
AN AGENCY OF THE PROVINCIAL HEALTH SERVICES AUTHORITY

Waiting for West Nile Virus: Surveillance Activities, Results and Recommendations, British Columbia, 2004

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Background: In 2004, surveillance activities for West Nile virus (WNV) focused on three target groups – humans, dead corvids and mosquitoes. The objectives were a) to monitor WNV activity in British Columbia in order to predict increased risk to human health, inform public health decisions, guide communication strategies and monitor the effectiveness of control measures and b) to optimize mosquito control decision-making by identifying mosquito breeding sites and the geographic and temporal distribution of potential vector species in BC.

Methods:

Human Surveillance

- > Screened all blood, organ and stem cell donors
- > Tested all meningitis/encephalitis cases
- > Tested additional cases by physician request
- > Collected risk factor information for probable cases using revised national questionnaire
- > Informed Canadian Blood Services (CBS) of all West Nile virus test requests to enable donor deferral and inventory retrieval

Corvid Surveillance

- > Tested dead corvids for WNV using VecTest. Corvids submitted by:
 - > Public / Environmental Health Officers
 - > SPCA, Parks Department personnel, others
 - > Collected public reports of dead corvid sightings using an online form
- Note: birds sighted were not collected for testing.



Mosquito Surveillance

- > Trapped mosquitoes from 145 locations across BC
 - > Identified to genus (and to species for *Culex* mosquitoes)
 - > Pooled and tested by PCR
- > Used both gravid (n=36) and light traps (n=52)

Climate Monitoring

- > Developed cumulative temperature degree day maps for *Cx. tarsalis*
 - > Compared current year with 30-year provincial average

Results:

- > BC remained WNV-free in 2004; no evidence of West Nile virus infection was detected in humans, corvids or mosquitoes

Human

- > No locally-acquired or travel-related human cases were identified
- > 4.5% of suspect cases reported to CBS were blood donors and were deferred from donation
- > No transfusion-associated adverse events were reported

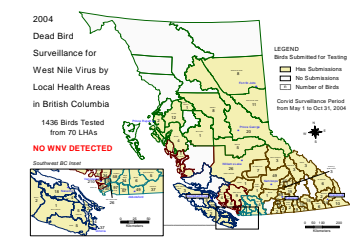
Corvid

- > Pre-WNV distribution of corvid deaths was similar over 2 years
- > No. of corvids tested and sighted decreased from 2003 to 2004
- > No. of corvids sighted (on-line form) closely mirrored those actually tested

Comparison of Bird Sightings and Testes, 2003 and 2004

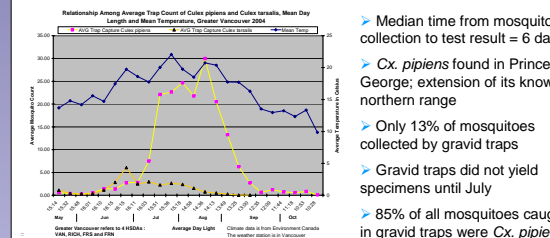
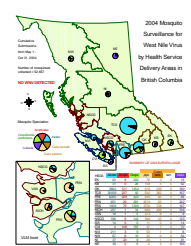
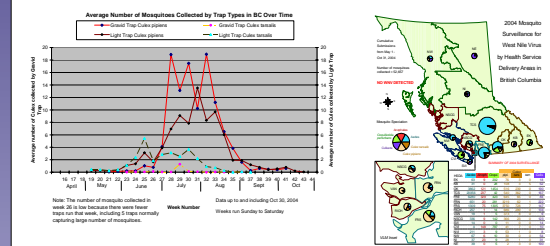
HSDA	Birds Submission, Urban Vs. Rural			Average Weekly Submission		% Urban	% Rural
	Urban	Rural	Total	Urban	Rural		
AB	23	10	33	0.7	0.3	100.0	0.0
BC	23	14	37	1.1	0.5	67.6	32.4
CD	33	19	52	1.3	0.7	65.4	34.6
DE	12	10	22	0.5	0.4	56.8	43.2
EF	12	10	22	0.5	0.4	56.8	43.2
FG	12	10	22	0.5	0.4	56.8	43.2
GH	12	10	22	0.5	0.4	56.8	43.2
HI	12	10	22	0.5	0.4	56.8	43.2
IJKL	12	10	22	0.5	0.4	56.8	43.2
LMNO	12	10	22	0.5	0.4	56.8	43.2
PQRS	12	10	22	0.5	0.4	56.8	43.2
STUV	12	10	22	0.5	0.4	56.8	43.2
WXYZ	12	10	22	0.5	0.4	56.8	43.2
Total	1194	333	1527	62.3	16.8	76.8	23.2

Note: * Assume the birds were evenly submitted during the 20 weeks of this surveillance season.



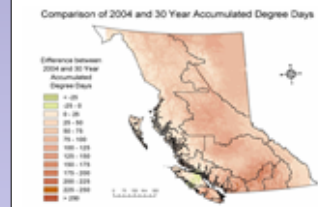
- > 97% birds suitable for testing; 97% could be mapped by GIS
- > 15/16 HSDA received results within 1 week of finding dead bird
- > 90% of submissions were American Crows
- > Magpies common in NE and Okanagan

Mosquito



- > Median time from mosquito collection to test result = 6 days
- > *Cx. pipiens* found in Prince George; extension of its known northern range
- > Only 13% of mosquitoes collected by gravid traps
- > Gravid traps did not yield specimens until July
- > 85% of all mosquitoes caught in gravid traps were *Cx. pipiens*
- > Drop in *Cx. pipiens* occurred when day length < 14 hours

Climate



- > More degree days accumulated in 2004 than 30 year average, especially in the Okanagan region
- > El Niño years typically produce hot and dry summers in BC (unlike the cool, wet weather on the prairies in 2004)

Recommendations:

- > Corvid collections in rural areas of the province must be improved, especially along the US and Alberta borders. Consideration may be given to more active surveillance in sentinel rural communities or to live bird capture and testing in high risk areas.
- > In 2005, gravid traps will be replaced with higher yielding CO₂-baited CDC light traps except in areas where *Culex pipiens* is abundant. In such areas, gravid traps will be used from the middle of June to the last week of August.