12-21-2005

West Nile Virus National Report on Dead Bird Surveillance, Canadian Cooperative Wildlife Health Centre

Patrick Zimmer
CCWHC HQ

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The following is a synthesis of data collected in the National WNV dead bird surveillance program in 2005. As such it reflects the activities of a range of jurisdictions and agencies, including Federal/Provincial/Territorial Health, Wildlife and Agriculture Departments and the Canadian Cooperative Wildlife Health Centre. All of the data used was compiled using the CCWHC database; minor discrepancies from other reports or websites are possible.

Prepared by Patrick Zimmer – CCWHC HQ
Year at a Glance

Official Start Dates: Surveillance began at different times in different jurisdictions. Some programs began testing as early as May 2, all jurisdictions were testing by the beginning of June.

Official end of testing: Due to differing program closing dates, the ability to make valid comparisons from previous years was significantly reduced as the season progressed. Some jurisdictions discontinued testing as early as the end of July, others by August 31 and still others in September and October.

Please note that the term “Positive” denotes a positive result using the MAS VecTest (ELISA) test and, depending on jurisdiction, confirmation via RT-PCR. At this time there is no standardized protocol for the reporting of WNV positive results for all jurisdictions across the country. However, all jurisdictions do perform confirmatory testing on a limited scale based on individual criteria, which may include confirmation of the first “x” number of VecTest positives for the season, first VecTest Positive for a geographic area, etc.

First Positive Bird: Week 20 (May 17) - Ontario
Last Positive Bird: Week 39 (September 28) - Ontario
Total birds received: 4151
Total birds tested: 3991
Total birds Positive: 447 (AB – 6, MB – 12, ON – 300, QC – 115, SK -14)
Total Birds negative: 3541

Note: No positives were reported in 2005 for BC, YK, NT, NU, NB, PE, NS, NL
Peak weeks (submissions and positives) – week 31-37.

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Bird Submissions by Week

Overall, the number of birds submitted nationally was lower than in previous years (64% that of 2004 and 34% of 2003) but this belies the fact that there were significant regional discrepancies in the number of birds submitted, with significantly fewer bird submissions in the prairie provinces, Quebec and the Atlantic region. In contrast, bird submissions were actually up or remained the same in Ontario and British Columbia (page 5)
Birds Submitted by Species

# of Birds Submitted by Species 2005-2001

Species

- Other Birds
- Stellar's Jay
- Gray Jay
- Common Raven
- Blue Jay
- Black-billed Magpie
- American Crow

# of Birds

Year 2001
Year 2002
Year 2003
Year 2004
Year 2005

Species Submitted - 2005

- American Crow: 75%
- Black-billed Magpie: 4%
- Blue Jay: 16%
- Common Raven: 4%
- All other birds: 1%
As previously noted, the number of bird submissions was down in 2005 from previous years. However there were significant regional variations in the number of birds submitted, BC and ON together made up 60% of all bird submissions nationally, an increase in proportion of 13% from 2004.

Note: in 2005 there were no submissions from YT and NU
# Birds Submissions by Province/Territory

## 2005-2001

### # of Birds Submitted by Province/Territory 2005-2001

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### # of Birds Submitted by Province/Territory

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### Yearly Breakdown

- **Year 2005**:
  - AB: 0
  - BC: 500
  - MB: 1000
  - NB: 1500
  - NF: 2000
  - NS: 2500
  - NT: 3000
  - NU: 0
  - ON: 500
  - PE: 1000
  - QC: 1500
  - SK: 2000
  - YT: 2500

- **Year 2004**:
  - AB: 0
  - BC: 200
  - MB: 400
  - NB: 600
  - NL: 800
  - NS: 1000
  - NT: 1200
  - NU: 1400
  - ON: 1600
  - PE: 0
  - QC: 200
  - SK: 400
  - YT: 600

- **Year 2003**:
  - AB: 0
  - BC: 0
  - MB: 0
  - NB: 0
  - NL: 0
  - NS: 0
  - NT: 0
  - NU: 0
  - ON: 0
  - PE: 0
  - QC: 0
  - SK: 0
  - YT: 0

- **Year 2002**:
  - AB: 0
  - BC: 0
  - MB: 0
  - NB: 0
  - NL: 0
  - NS: 0
  - NT: 0
  - NU: 0
  - ON: 0
  - PE: 0
  - QC: 0
  - SK: 0
  - YT: 0

- **Year 2001**:
  - AB: 0
  - BC: 0
  - MB: 0
  - NB: 0
  - NL: 0
  - NS: 0
  - NT: 0
  - NU: 0
  - ON: 0
  - PE: 0
  - QC: 0
  - SK: 0
  - YT: 0
Positive Birds by Week

As in the past, the first bird to be reported positive for West Nile Virus was found around the beginning of May (Week 20), and peak WNV activity, as reflected by the number of positive birds, was from approximately week 30 to 37 (late July to early September).
Positive Birds by Species

Proportion of Positives by Species 2003-2005

Proportion of Submissions by Species 2003-2005
Positive Birds by Province/Territory and Week

# of Positive Birds by Province and Week - 2005

Week 20 = May 16-22, 2004

While program termination dates influence these numbers, a comparison from 2003 onwards shows that, proportionately, ON and QC comprise 80% or more of the positive birds tested, while making up only 40-50% of the total number of birds tested.
% Positive by year

Week

Province | # Submitted | # Tested | # Positive | % Positive | # Submitted | # Tested | # Positive | % Positive | # Submitted | # Tested | # Positive | % Positive |
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Saskatchewan Health/CCWHC 2005 House Sparrow Project

A pilot project was initiated in 2005 between the CCWHC and Saskatchewan Health to detect West Nile Virus in House Sparrow nestlings. Blood was collected from nesting House Sparrows and tested via PCR for WNV. A total of 74 samples was collected at two distinct time periods (corresponding to the nesting periods of the Sparrows): 61 samples were collected during the first two weeks of July and an additional 13 samples were collected in mid-August. All samples were collected from the Outlook area of Saskatchewan, near Saskatoon.

Results:
4 of the 61 samples collected in July tested positive for WNV, the first positive dating from July 7th, almost two full weeks in advance of the first dead corvid that tested positive in Saskatchewan and over 5 weeks in advance of the first positive dead corvid found in the surrounding region (Saskatoon).

An additional 4 positives dated from the second sampling period in mid August (4 out of 13). Prevalence of WNV infection was 6.5% in the July sample (n=61) and 30% in the August sample (n=14). Overall prevalence was 8 of 74 (0.11).

In the past, rural areas of SK have been inadequately represented by the dead corvid surveillance program, as reflected by the very small number of submissions from these areas. This is particularly unfortunate in that data deriving from both mosquito surveillance and human WNV cases suggest that these regions are some of the most active for WNV in Saskatchewan. Surveillance for early WNV activity based on House Sparrows should be further explored as a means of achieving effective surveillance in rural areas.
Non-corvid WNV Positive Submissions

In addition to the thousands of crows and their close relatives that have been examined under the dead corvid WNV surveillance program (approximately 30,000 to date), the CCWHC has documented disease, due to WNV, in 21 other species through its regular system of wildlife disease surveillance. A search of the CCWHC database revealed approximately 100 confirmed cases from 5 provinces over a 4 year time period (2002-2005 inclusive).

Of these, Eagles, Hawks and Owls are the most commonly affected species. In addition to these larger birds, positive West Nile Virus diagnoses have been documented in such species as American Robins, Eastern Bluebirds, Cedar Waxwings, Merlins, American Kestrels, Eastern Gray Squirrels, Red Squirrels and the endangered Sage Grouse.