



# OAHN HEALTH NETWORK FINAL REPORT

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**Project #:** OAHN-08

**Project Title:** Developing and piloting a web-based reporting system to enhance wildlife disease surveillance in Ontario

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**Start date:** January 2015      **End date:** December 2017

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## Executive Summary

- A web-based interactive reporting tool, the Wildlife Health Tracker (WHT; <http://wildlifehealthtracker.com/>), was developed to record observations of wildlife mortality and morbidity – the web site provided up to date maps and information on the reported observations.
- A total of 95 users, including hunters, biologists, wildlife rehabilitators, and members of the general public, registered with the WHT and reported 115 observations between January 2015 and December 2017. Communication via email played a vital role in increasing the number of new users that registered.
- Data from observations submitted to the WHT between October 1<sup>st</sup> 2016 – October 1<sup>st</sup> 2017 were compared to surveillance data collected via the Canadian Wildlife Health Cooperative (CWHC). Compared to the CWHC reports, observations submitted to the WHT were more localized, dominated by mammals, and more likely to be trauma related. These differences demonstrate the potential of the WHT to augment current wildlife surveillance in Ontario.
- Through the WHT user survey, it was determined that running a web-based surveillance platform requires 1) frequent communication, and 2) ongoing technical management.
- To enhance the user-interface and accessibility, the WHT will be updated to a mobile application with more user features (including more informative maps and easier picture upload features).

- The national office of the CWHC will take over managing the WHT in the new year. This will allow the WHT to capture wildlife morbidity and mortality events across Canada and increase the number of users who can actively register.

## **Objectives**

The overall objective of this project was to develop and assess a new web-based wildlife disease reporting tool to enhance ongoing wildlife disease surveillance in Ontario.

## **Materials and methods**

Ethics approval (REB 16-12-442) was obtained from the University of Guelph Research Ethics Board.

### Website Development

The Wildlife Health Tracker (WHT) was developed as a web-based reporting system (<http://wildlifehealthtracker.com>). The website includes current maps and information about reported observations that are updated as reports are entered into the WHT.

### Engagement:

Emails and phone calls were made opportunistically to potential stakeholders (e.g., hunter and biologist groups) during the surveillance tool's initial launch which started in October 2016. There was a strong focus on engagement starting in May 2017, when a Master of Public Health student was hired. Emails were sent between May 2017 and October 2017 to individuals and groups identified as having an interest in wildlife health to promote the WHT and broaden stakeholder engagement.

### Data Collection & Analysis:

All information pertaining to user data (age, sex, user type (hunter/biologist), years active as hunter/biologist) and the corresponding entry data (species type, latitude/longitude, description of observation, date reported, and number of observations) was extracted from the WHT. Data from wildlife reports between October 1<sup>st</sup> 2016 and October 1<sup>st</sup> 2017 were extracted from the WHT and CWHC database for comparative analysis. Basic descriptive statistics were performed in Excel.

### Survey Design & Implementation:

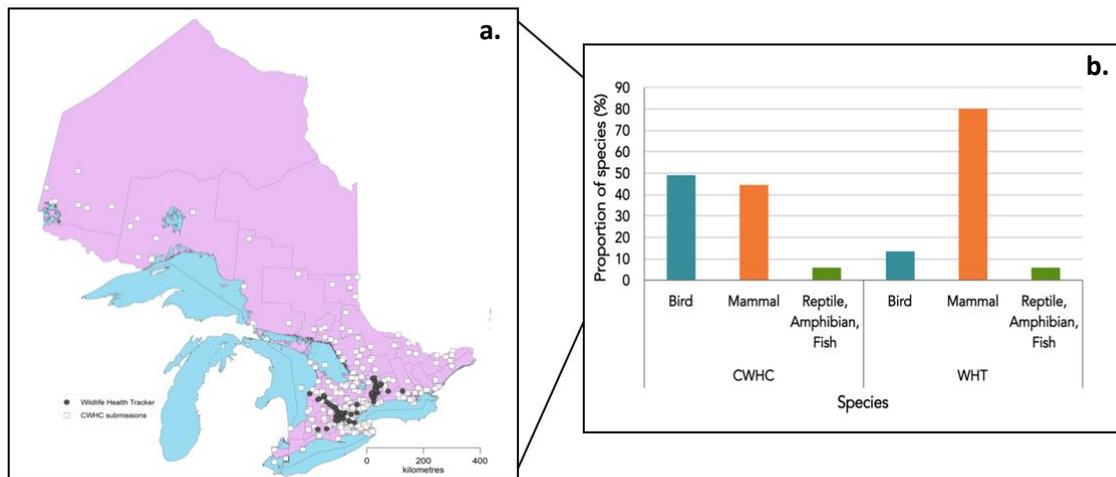
An online survey was developed in Survey Monkey and piloted with 5 individuals. The final survey was administered on October 16<sup>th</sup> to WHT users to gain feedback on their experience, engagement, and to identify ways of improving the WHT. The types of questions asked on the survey were to determine: if the user reported observations, if the user accessed the WHT map, the utility and function of the WHT, user engagement and experience with the WHT tool.

## Results

In total, the WHT had captured 115 observations as of December 12<sup>th</sup> 2017, and had a total of 95 registered users. Data analysis and descriptive statistics were completed over a single calendar year from October 1<sup>st</sup> 2016 to October 1<sup>st</sup> 2017 and are presented in the results below.

### Comparison of WHT and CWHC

- In total, the WHT received 107 observations from October 1<sup>st</sup> 2016 to October 1<sup>st</sup> 2017. Over the same time period, the CWHC database received 588 observations from Ontario. Breakdowns of reports by geographic region and species are provided in **Figure 1**.
- 46% (49/107) of observations reported to the WHT were recorded as trauma, whereas 18% (106/588) of cases reported to the CWHC were associated with trauma.



**Figure 1. a.** Geographic distribution of observations from the WHT (n=107) and CWHC (n=588); **b.** Breakdown of species category captured by WHT and CWHC databases.

### Reported Observations to the WHT (n=107)

- In total, there were 95 registered WHT users.
- Only 21% of users recorded observations to the WHT; 79% of users did not report any observations. Four users were responsible for 71% of all reported observations.
- 16% of users were under 25 years of age, 46% were between the ages of 25-44, 28% were between the ages of 45-64, and 4% of users were over 65 years of age; 5% of users did not specify an age category.

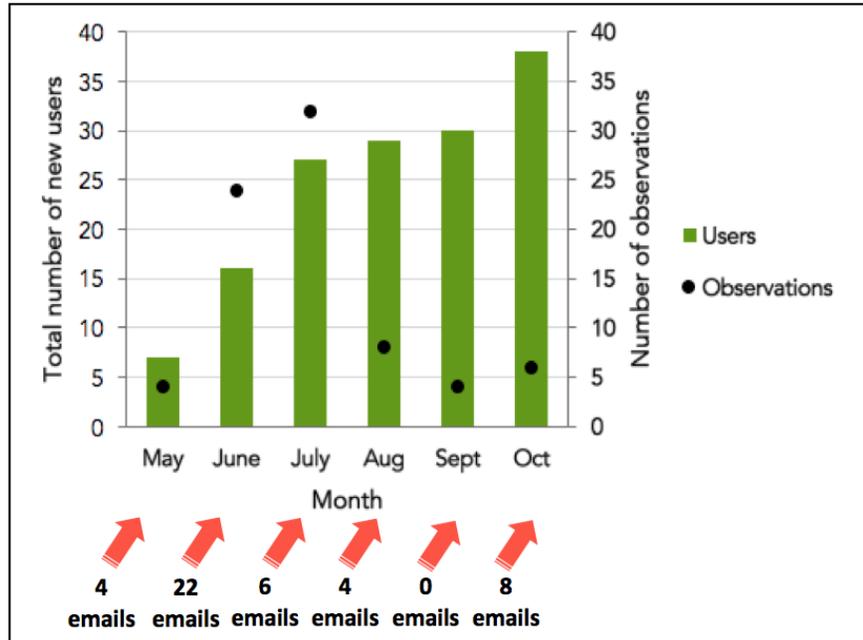
- WHT users under 25 were more likely to report observations; this age category was responsible for 45% of all reported observations. Users aged 25-44 years were responsible for 42% of reported observations to the WHT.
- 60% of WHT users were female and 39% were male; 1 user did not specify a gender.
- 20% of WHT users identified as hunters and 37% identified as biologists; 43% of users did not identify as either a hunter or biologist
  - Of the 19 WHT users who identified as hunters: 10 were female, 8 were male, and 1 did not specify a gender.
  - Of the 35 users who identified as biologists: 16 were female, 18 were male, and 1 did not specify a gender.
- Hunters were responsible for 13% of all reports to the WHT, whereas biologists were responsible for 41% of all submitted reports.

### Observation Details

- Out of the 107 reported observations: 87 were mammals, 13 were birds, and 7 were amphibians, reptiles or fish.
- 92% of observations were reported as dead.
- 46% of observations reported to the WHT were identified as trauma cases.
- 9% of observations submitted to the WHT were also reported to the CWHC.

### Engagement

There was a strong focus on engagement starting in May 2017. During this time, engagement efforts (e.g., emails) were tracked, including the number of new users and monthly observations reported to the WHT (**Figure 2.**)



**Figure 2.** Cumulative number of WHT users per month, number of monthly observations reported to the WHT, and number and timing of recruitment emails sent between May and October 2017.

### Survey

- The online survey was sent to 95 registered WHT users, and 47 responded. Out of the 47 respondents, 26 had re-visited the WHT site after registering, 13 had viewed the map and only 8 had reported observations.
- 39 respondents reported no observations; 16 attributed this to not observing any sick or dead wildlife, 8 were unsure how to report or forgot to report, and 5 listed technical issues.
- In total, 14 respondents agreed/strongly agreed that they were contributing to wildlife conservation in Ontario through their participation in the WHT.
- Out of all respondents, 14 said they would continue to report in the future.
- Top suggestions for improvement included development of a mobile application and the need for a password recovery mechanism.

### **Discussion**

The WHT has the potential to fill gaps in our current wildlife surveillance activities through a web-based citizen science approach. Because this tool allows anyone to register and report sick or dead wildlife observations instantly into a centralized online database, the WHT has the potential to capture an additional subset of information that is not currently being captured by the traditional CWHC reporting system.

Overall, the 107 observations reported to the WHT were more localized, dominated by mammals, and more likely to be trauma-related when compared to the CWHC reports. This difference demonstrates the potential for the WHT to complement and enhance traditional CWHC reporting activities. The WHT will enhance our ability to fill gaps in our current surveillance activities, with the potential to augment wildlife health surveillance in Ontario and Canada.

During the pilot phase of this project we received less engagement and participation from hunter or biologist groups than expected. In fact, hunters and biologists only accounted for roughly half of all registered users, and only a small proportion of either group reported observations to the WHT. This was surprising due to the more frequent interactions and heightened interest these groups have with wildlife. Because of the low number of hunter and biologist WHT users, we decided to engage a wider, more general audience for the WHT to capture a greater number of observations, as well as engage more potential users across Ontario.

Communication via email played an important role in increasing the number of new users that registered for the WHT. Because emails were only sent to people not already registered with the WHT, there was no active re-engagement of current users and this may have reduced the number of reported observations (e.g., if may have forgotten to report). Therefore, to enhance engagement and reporting to the WHT, future communication efforts should target both new and current users.

Feedback from WHT users indicated that 1) frequent communication, and 2) ongoing technical management were necessary to maintain user engagement. While this tool was in its pilot phase it was encouraging to note that respondents/users of the WHT felt that they were contributing to wildlife conservation in Ontario.

As the pilot portion of the project winds down, the WHT will be taken over by the CWHC national office. This will allow the CWHC to capture wildlife morbidity and mortality events across Canada and increase the number of users who can actively register and engage with the WHT. Running the WHT will take the work of all regional offices to recruit, engage, and actively communicate with hunter and biologist groups, as well as citizens to maximize its use.

## **Applications**

The utility and functionality of this tool has the potential to engage a wide audience, including hunters, biologists, and citizens who are interested in wildlife health. Planned improvement to the WHT could further increase data sharing among groups and individuals interested in wildlife health and help to broaden stakeholder engagement (hunters, biologists) in wildlife disease surveillance, ultimately leading to heightened vigilance and rapid detection and control of emerging diseases.

Moving forward the WHT will be operated by the CWHC at a national scale. Planned updates include the development of a mobile application to increase accessibility in reporting wildlife events as they are spotted.

## Communications

- Presented WHT at the International Conference for Animal Health Surveillance in New Zealand (May 2017)
- Blog post on wildlife surveillance/WHT, written for World Environment Day for CWHC blog (June 2017)
- WHT business cards distributed to the Guelph Arboretum (June 2017)
- Presented the WHT at the national CWHC workshop (June 2017)
- Presented the WHT at the annual general CWHC meeting (June 2017)
- WHT business cards were handed out to hunter groups in Ontario (June/July 2017)
- Infographic on wildlife surveillance and the WHT was developed for the CWHC and OAHN (July 2017)
- Post and infographic for the Ontario Wildlife Foundation Newsletter (July 2017)
- Presented information about the WHT at the Gun/Sportsman Show in Parry Sound (August 2017)
- Presented WHT to MNR Biologists (August 2017)
- Met with representatives of the Ontario Federation of Hunters and Anglers and with the Ontario Ministry of Natural Resources and Forestry (October 2016)
- Poster and presentation delivery on the WHT at the annual Masters of Public Health Forum Day at the Ontario Veterinary College (November 2017)
- WHT mentioned in CWCH ON/NU Quarterly Reports: Quarter 1 (Jan 1<sup>st</sup> – March 31<sup>st</sup>, 2017), Quarter 2 (April 1<sup>st</sup> – June 30<sup>th</sup>, 2017), Quarter 3 (Jul 1 – Sept 30<sup>th</sup>, 2017)
- Interview on the WHT was conducted for the SPARK research magazine at the University of Guelph (November 2017; expect this to come out in early 2018)
- Abstract and poster will be submitted to the Wildlife Disease Association Conference (2018)
- Two Papers are being prepared for publication in peer reviewed journals, including a review of wildlife health surveillance literature, and a paper on the WHT and its value for wildlife disease surveillance (2018)