



CANADIAN
WILDLIFE HEALTH
COOPERATIVE

A NATIONAL PLAN
to manage White Nose
Syndrome in bats in Canada

**CREATING A WORLD
THAT IS SAFE AND SUSTAINABLE
FOR WILDLIFE AND SOCIETY**



Prepared by Canada's Inter-agency White Nose Syndrome Committee

Reporting to the

Canadian Wildlife Directors Committee

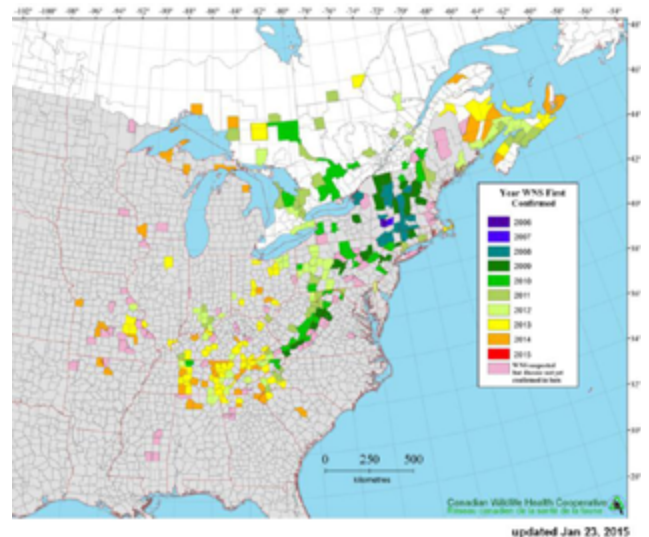
Contact persons

Craig Stephen, Executive Director Canadian Wildlife Health Cooperative
cstephen@cwhc-rccsf.ca; Tel. 306 371 7177

Jordi Segers, Canadian White Nose Syndrome Program Coordinator
jsegers@cwhc-rccsf.ca; Tel. 902 628 4314

Preface

This document outlines the revised goals and action items of the Canadian White Nose Syndrome (WNS) technical working groups, as previously established in "A National Plan to Manage White Nose Syndrome in Bats in Canada, 16 February 2012". This original document adopted and adapted the US Fish and Wildlife Service document "A National Plan for Assisting States, Federal Agencies, and Tribes in Managing White-Nose Syndrome in Bats, May 2011" to fit the Canadian context and to organize Canada's responses to be in harmony and collaboration with US plans and actions, as much as possible. Five technical working groups were established from the Canadian inter-agency committee and actionable items are listed per working group. The working groups for Communication & Outreach, and Data Management support the activities of the technical working groups for Mitigation, Population Monitoring, and Surveillance and Diagnostics. The Canadian plan does not include a parallel section to that found in the US plan as Section D: Disease Management. The inter-agency committee set aside this component due to increasing uncertainty as to what, if any, measures can be taken to alter the prevalence, impact or spread of WNS. The committee will continue to consider actions that may mitigate the impact of WNS and include these in action plan formulation where possible.



Revised February 2015



I. Communication and Outreach Technical Working Group

Members

Jordi Segers (Chair/ National coordinator)	Christina Davy
Sybil Feinman	Katie Gilles
Chris Heydon	Lesley-Anne Howes
Pamela Logan	Ariane Masse
Ken Mayhew	Allysia Park
Mary Sabine	Patrick Zimmer
Ryan Zimmerling	

Overview

This Working Group consists of primarily people with communications responsibilities on WNS for government agencies, and university and NGO personnel with similar responsibilities. This working group is not responsible for the technical content of material but for its effective targeting, dissemination and advocacy. It works in association with technical working groups and its primary purpose is to implement the plans made by the technical working groups.

The purpose of this communication is to develop a WNS communication and outreach plan for 2015 and beyond to set priorities and achievable targets, as well as identify lack of resources to address essential communication and outreach efforts.

Goals and Actions

- 1. Communicate research, monitoring, surveillance, management, and conservation activities among internal audiences within Canada and the US to facilitate an effective Canadian response to WNS.**
 - a. Communicate about the efforts of partner agencies and organizations involved in WNS investigations to control and manage WNS.
 - b. Encourage Federal, Provincial and Territorial agencies, NGOs, others to develop their own websites for WNS.
 - c. Advocate for and seek support for research projects that investigate the economic importance of bats and the economic impact of WNS
- 2. Communicate about WNS as an unprecedented North American wildlife disease event with devastating consequences, with an alarming rate of spread, and with no obvious means of control.**
 - a. Develop and distribute standards for PSAs en posters for public education.
 - b. Gain involvement in the Edubat program and apply to Canadian audiences.
- 3. Communicate about the importance of bats to people, ecosystems, biodiversity, and economies.**
 - a. Develop and distribute standards for PSAs en posters for public education.
 - b. Gain involvement in the Edubat program and apply to Canadian audiences.



- 4. Develop and maintain a Canadian (French and English) WNS website.**
 - a. Disseminate information that is responsive to a broad range of frequently asked questions regarding WNS.
 - b. Deliver and update products customized to convey key information about WNS and the response actions occurring in North America.

- 5. Distribute recommended standard practices and procedures that reduce the risk of geographic spread of WNS in North America.**
 - a. Provide a public source of contact for information to help interested public and media easily find up-to-date, accurate information about WNS efforts in partner agencies and organizations in Canada.

- 6. Publicize the need for public reporting and establish telephone and on-line mechanisms for reporting.**
 - a. Establish mechanisms by which the Canadian public can report observations of bats relevant to identifying hibernacula and occurrences of WNS.

- 7. Identify WNS stakeholder groups and primary contact points for each. Communicate with stakeholders to invite participation and establish positive partnerships with Inter-agency WNS Committee.**
 - a. Recreational caving groups.
 - b. Conservation NGOs.
 - c. Relevant resource industries.
 - d. Relevant recreational equipment industries.
 - e. Relevant government authorities (bats, caves, OHS).
 - f. Pest-control businesses and associations.
 - g. Research institutions.

- 8. Develop and implement communication strategies for major communication initiatives.**
 - a. BMPs for intrusions into bat habitat (caves, mines, forestry).
 - b. BMPs for bats and wind energy.
 - c. BMPs for bats and agriculture.
 - d. BMPs for bats and urban development.
 - e. BMPs for bats and hydroelectric developments.

- 9. Dissemination of information on general bat conservation opportunities and practices.**



Priority action items

3 months

- Publicize the need for public reporting and establish telephone and on-line mechanisms for reporting.
- Identify WNS stakeholder groups and primary contact points for each. Communicate with stakeholders to invite participation and establish positive partnerships with Inter- agency WNS Committee.

6 months

- Communicate about WNS as an unprecedented North American wildlife disease event with devastating consequences, with an alarming rate of spread, and with no obvious means of control.
- Communicate about the importance of bats to people, ecosystems, biodiversity, and economies.

12 months

- Develop and implement communication strategies for major communication initiatives.

> 12 months

- Distribute recommended standard practices and procedures that reduce the risk of geographic spread of WNS in North America.
- Ongoing
- Communicate research, monitoring, surveillance, management, and conservation activities among internal audiences within Canada and the US to facilitate an effective Canadian response to WNS.
- Develop and maintain a Canadian (French and English) WNS website.
- Dissemination of information on general bat conservation opportunities and practices.



II. Data management Technical working group

Members

Patrick Zimmer (Chair)
Kevin Brown
Chris Heydon

Jordi Segers (National coordinator)
Charles Francis
Ryan Zimmerling

Overview

The purpose of this working group is to identify and recommend the data management tools and systems required by the other working groups and the Inter-agency WNS Committee as a whole. It also works with US agencies to achieve whatever sharing of data is agreed to between US groups and the Canadian Interagency WNS Committee.

Goals and Actions

1. **Assess the information management needs of the WNS response program. Identify and evaluate data management systems agreed to by the working groups and the Inter-agency committee.**
 - a. Propose the technical methods by which those data management needs can best be met.
2. **Identify and evaluate database systems that can be used by all Federal/Provincial/Territorial agencies, and serve as a central repository for nationwide analyses and specific projects.**
 - a. Identify data to be archived centrally and identify available data management systems.
 - b. Understand the status of the USGS Bat Populations Database.
 - c. Understand US FOIA and implications for Canadian data in US Bat Population Database.
 - d. Create and maintain a listing of existing and archived databases along with relevant metadata.
3. **Integrate WNS data from F/P/T agencies, land managers, and other sources into a centralized system.**
 - a. Assemble information on the biology and management of bats and any other wildlife species at risk for developing WNS in Canada.

Priority action items

3 months

- Assess and determine the information management needs of the Canadian WNS response program.
- Identify and catalogue existing data sources associated with bat conservation and/or WNS.
- Where required and appropriate collect WNS data from F/P/T agencies, land managers, and other sources into a centralized system/repository.

Ongoing

- Support other working groups in data management needs.



III. Mitigation Technical Working Group

Members

Jordi Segers (National coordinator)
Don McAlpine
Mark Elderkin
Ruben Boles
Tom Jung
Ariane Masse
Sybil Feinman

Chris Heydon
Todd Shury
Lenny Shirose
Cori Lausen
Anouk Simard
Susan Holroyd
Ryan Zimmerling

Overview

This Working Group is responsible primarily for writing or approving best practice guidelines for mitigation activities that can be undertaken now, and to propose additional mitigation activities in the future as these arise from new science or clever inventions. The dissemination of best practice information will be the responsibility of the Working Group on Communication and Outreach.

Goals and Actions

1. **Make inventory of mitigation efforts in Canada.**
 - a. Identify what is being done.
 - b. Get additional experts on group.

2. **Write best practices for protection of bats.**
 - a. Develop guidelines and model regulations regarding access to caves.
 - b. Nuisance Wildlife Control at maternity colonies.
 - c. Bats and wind energy.
 - d. Bats and mining and caving.
 - e. Bats and forestry.
 - f. Bats and hydroelectric developments.
 - g. Bats and agriculture.
 - h. Bats and urban development.

3. **Should proven environmental treatments for WNS become available, establish methods for restoring hibernation sites to provide refuge for surviving and non-affected individuals.**
 - a. Monitor US progress and if appropriate participate in US trials.



- 4. Mitigate sources of mortality that have additional detrimental influences on bat populations.**
 - a. Identify and rank other anthropogenic sources of mortality; integrate with best management practices.
 - b. Collaborate with cave researchers, caving community, and commercial cave managers/tour operators.
 - c. Work with industry (including wind farms and mining) to explore best management practices to reduce impacts or explore alternative mitigation or compensation.

- 5. Establish and maintain a list of prioritized research needs and work closely with other working groups to see that high-priority needs are met.**
 - a. Develop and prioritize Canadian research needs for improved monitoring, recovery and conservation.
 - b. Compile research needs from all Canadian Working Groups to identify research interests and priorities and ensure these are reflected in North American working documents; ensure Canadian researchers are aware of funding and collaboration opportunities.

Priority action items

3 months

- Make inventory of mitigation efforts in Canada.

12 months

- Mitigate sources of mortality that have additional detrimental influences on bat populations.
- Write best practices for protection of bats.

Ongoing/ > 12 months

- Establish and maintain a list of prioritized research needs and work closely with other working groups to see that high-priority needs are met.
- Should proven environmental treatments for WNS become available, establish methods for restoring hibernation sites to provide refuge for surviving and non-affected individuals.



IV. Population monitoring Technical Working Group

Members

Charles Francis (Chair)

Mark Brigham

Mark Browning

Chris Heydon

Tom Jung

Ariane Masse

Craig Willis

Ryan Zimmerling

Jordi Segers (National coordinator)

Hugh Broders

Sybil Feinman

Jessica Humber

Cori Lausen

Anouk Simard

Joanna Wilson

WNS Population monitoring Overview

Populations of several species of bats are declining because of WNS. Because species affected by WNS range across provincial/territorial and international boundaries, conservation and recovery efforts need to be closely coordinated across Canada and with the United States to be effective. Monitoring WNS-affected bat populations is necessary to determine which species may be most at risk of local extirpations and extinction due to WNS, and where conservation and management activities would be most effective. Coordination will be critical to this effort as dramatic losses from WNS, added, perhaps, to other sources of mortality, can rapidly affect the conservation status of affected populations. Population monitoring differs from WNS surveillance in that it concerns the status of entire species or genetically important populations, rather than the distribution and dynamics of the disease. Until the threat of WNS has passed or has been mitigated, best practices are needed for the maintenance and recovery of bat populations of greatest conservation concern.

Goals and Actions

This Working Group is a technical scientific working group consisting of people actively engaged in population monitoring and/or those directly responsible for this activity.

1. **Identify all bat population monitoring activities underway in Canada and adjust membership as needed to directly or indirectly incorporate all activities within the group.**
 - a. Determine methods currently being used, their equivalence and comparability.
 - b. Identify all available data on bat populations, hibernacula and maternity colony sites.
 - c. Work with Technical Working Group on Data Management to achieve a data management system that meets the needs of bat population monitoring.
 - d. Establish agreement among data owners on how such data can be made available for use in WNS response actions, levels of data security, restrictions on access to data and best means of storing and accessing these data now and prospectively as monitoring proceeds in the future.
 - e. Identify opportunities in population monitoring activities for obtaining samples for WNS and P.d. surveillance and research, and communicate these to the Surveillance working group.
2. **Agree on the methods to be used in Canada for population monitoring (NABat) and advocate that all bat population monitoring in Canada is carried out by these methods.**



- a. Develop strategy for implementation of NABat in Canada.
 - i. Identify geographic priority areas.
 - ii. Involve volunteers/citizen science for implementation.
 - b. Represent Canada at USFWS workshops on monitoring methods and disseminate the outcome of these to other bat monitoring groups in Canada.
 - c. Ensure methods used in Canada are analytically compatible with US methods so data can be combined as needed for continental management analysis.
- 3. Develop and validate rapid-assessment monitoring plans to determine differences in susceptibility among species, and to identify which species are most vulnerable to extinction due to WNS.**
- a. Seek consensus on feasible monitoring techniques and protocols that will gauge impacts of WNS on bat species.
 - b. Develop and implement monitoring plans to establish the degree to which different species of bats in Canada are vulnerable to WNS.
 - c. Collaborate across Canada and with the US to establish best practices for monitoring populations on a range-wide scale for species of greatest conservation concern.
- 4. Establish criteria for prioritizing conservation activities**
- a. In association with the Committee on the Status of Endangered Wildlife In Canada (COSEWIC) and US planners, develop criteria for determining which species affected by WNS warrant conservation action, which may include identifying proportions of populations affected or thresholds of population size at which conservation actions should be taken.
 - b. Develop contingency plans for implementing conservation actions if populations of greatest conservation concern decline and approach the threshold of population viability (e.g., extirpation or extinction).
- 5. Determine best practices for maintaining and recovering populations.**
- a. Prioritize monitoring and recovery efforts based on analysis of species vulnerability.
 - b. Recommend protection or restoration of summer and winter habitat to ensure that quality habitat is available for bat populations before and after exposure to WNS.
 - c. Should proven environmental treatments for WNS become available, establish methods for restoring hibernation sites to provide refuge for surviving and non-affected individuals.
 - d. Identify previously occupied hibernacula and suitable but previously unused sites that warrant continued protection for bat recovery, and clearly identify a means of justifying such protection.
- 6. Research on most effective methods for monitoring, conserving, and recovering affected**



populations.

- a. Establish and maintain a list of prioritized research needs and work closely with other working groups to see that high-priority needs are met.
- b. Regularly assess monitoring, conservation, and recovery practices in light new research findings, and refine when appropriate.

Priority action items

3 months

- Identify all bat population monitoring activities underway in Canada and adjust membership as needed to directly or indirectly incorporate all activities within the group.

6 months

- Agree on the methods to be used in Canada for population monitoring (NABat) and advocate that all bat population monitoring in Canada is carried out by these methods.
- Establish criteria for prioritizing conservation activities

12 months

- Develop and validate rapid-assessment monitoring plans to determine differences in susceptibility among species, and to identify which species are most vulnerable to extinction due to WNS.
- Determine best practices for maintaining and recovering populations.

Ongoing

- Research on most effective methods for monitoring, conserving, and recovering affected populations.



V. Surveillance & Diagnostics Technical Working Group

Members

Scott McBurney (Chair)

Trent Bollinger

Andre Dallaire

Charles Francis

Chelsea Himsworth

Cait Nelson

Juanping Xu

Ryan Zimmerling

Jordi Segers (National coordinator)

Doug Campbell

Sybil Feinman

Chris Heydon

Ariane Masse

Karen Vanderwolf

Marnie Zimmer

WNS Surveillance

Overview

Disease surveillance efforts should focus on early detection of the expansion of WNS to new areas across Canada and, when possible, documentation of the progression of WNS through time within affected hibernating bat colonies. The surveillance efforts, which target mainly the observation of physical signs of the disease in bats, should therefore provide a better understanding of where WNS persists or has spread, and its effect on the demography of the different bat species that can be affected by this disease. The implementation of a standardized, coordinated national WNS surveillance plan will therefore be crucial to effectively monitor the regions affected by this disease, provide up-to-date information to the different agencies involved in the response plan against WNS, as well as make a better assessment of the impact of WNS on bat populations throughout the country.

Goals and Actions

Create a coordinated disease surveillance program nationwide that identifies and minimizes disturbance to bats and potential transmission risks while still enhancing early detection and providing an assessment of WNS impact on bat populations.

1. **Identify WNS and hibernacula surveillance experts per province to provide a detailed contact list for the inter-agency committee.**
 - a. Data requests can be made to people on the list when required.
 - b. Sites of significance (< 2000 bats) and species affected can be identified to increase early detection of WNS, or need for protection of habitat (cave closure) or listing new species under the SARA.



- 2. Develop and provide recommendations for coordinated disease surveillance.**
 - a. Keep communication with the U.S. to maintain standardized criteria and terminology to designate WNS-affected sites.
 - b. Adopt appropriate terminology and criteria for visualizing WNS positive areas on map (especially for northern areas).
 - c. In known WNS-affected areas, bat populations should be monitored to assess disease progression and effects of management actions.
 - d. In areas outside of WNS-affected regions, surveillance should provide early detection of WNS, expansion from affected areas, and new epicentres of WNS.
 - e. In all areas, surveillance should provide early detection of WNS in species that have been classified as Endangered, Threatened or of Special Concern, as well as in species that do not fall under these classifications.
 - f. In all areas, disease surveillance should be conducted mainly in winter (hibernation) and/or early spring (emergence) to maximize the likelihood of identifying bats with evidence of fungal growth or other physical signs associated with WNS.

- 3. Develop effective surveillance strategies based on disease risk and assist with implementation.**
 - a. Provide guidance for sample collection and submission, and for prioritizing sites to optimize surveillance efforts.
 - b. Determine appropriate sampling frames and sample sizes required to meet surveillance objectives.
 - c. Incorporate appropriate protocols in sampling techniques to minimize stress on bats and the chance of transmitting *Pseudogymnoascus destructans* to new animals and sites.

- 4. Integrate surveillance efforts with those of other WNS working groups.**
 - a. Samples (e.g., wing biopsies where fungal growth is observed) of specimens collected from surveillance should be kept according to most recently updated protocols to allow further investigation of WNS (e.g., genetic characterization).



WNS Diagnostics

Overview

Accurate, reliable diagnosis of the presence of *P. destructans* and WNS in bats is a foundation for sound, effective disease management decisions by resource agencies. This requires laboratory capacity sufficient to run a meaningful number of standardized assays relative to the sampled population, in a useful timeframe. Primary diagnostic priorities include detecting WNS in new species, new locations, and at biologically significant sites that may harbor vulnerable bat populations.

Secondary diagnostic priorities include supporting research and surveillance at previously confirmed WNS positive locations.

Testing may be done at provincial, university or private laboratories with a minimum of Biosafety Level-2 (BSL-2) status that are willing to test samples and report WNS status results, following established, peer-reviewed methods endorsed by the network of WNS diagnostic laboratories.

Goals and Actions

Conduct, maintain and report on standardized laboratory testing of P.d. and assess and support testing capacity throughout Canada.

1. **Keep consensus standards for WNS testing and interpretation within Canada and with the U.S.**
 - a. Communication among participating laboratories assures consistent assay application, interpretation, and diagnoses.
 - b. Provide case definitions for suspected and confirmed cases of WNS.
2. **Provide adequate diagnostics lab capacity and assist agencies and public in identifying labs and cost.**
 - a. Assess laboratories currently involved in WNS diagnostics for sample processing capacity by the various assay methods (histology, PCR, fungal culture, light microscopy).
 - b. Survey resource agencies for their projected short-term and long-term WNS diagnostic needs.
 - c. Assist agencies in identifying suitable diagnostic laboratories to help meet their disease management needs.
 - d. Assess funding requirements based on the projected diagnostic needs of resource agencies.
3. **Ensure that samples submitted to diagnostic laboratories are suitable for WNS testing.**
 - a. Provide protocol descriptions of ideal sample quality and sample storage requirements needed for the available WNS assays to resource agencies and other researchers to ensure that samples collected are suitable for diagnostic evaluation.



- 4. Assist with timely reporting of WNS testing results to inform the appropriate resource management agencies for release to the broader WNS community.**
 - a. Work with the Data and Technical Information Management Group to keep an accessible but secure database for tracking sample results and disease progression.
 - b. Provide monthly WNS survey updates during the surveillance season (November to April) to the inter-agency committee.

- 5. Support WNS research in areas such as epidemiology, treatment/management options, improved diagnostic assay development, etc.**
 - a. Work with U.S. colleagues to critically review current knowledge of WNS diagnostic methods to identify gaps in knowledge and need for further research.
 - b. Set priorities on possible diagnostic research topics and estimate costs and possible sources of funding.
 - c. Help coordinate laboratory assistance with other WNS research projects requiring testing of samples, and ensure that this support does not negatively affect the budgets of the diagnostic laboratories doing this work.

Priority action items

3 months

- Identify WNS and hibernacula surveillance experts per province to provide a detailed contact list for the inter-agency committee.
- Provide adequate diagnostics lab capacity and assist agencies and public in identifying labs and cost.

6 months

- Develop and provide recommendations for coordinated disease surveillance.
- Develop effective surveillance strategies based on disease risk and assist with implementation.
- Ensure that samples submitted to diagnostic laboratories are suitable for WNS testing.

12 months

- Support WNS research in areas such as epidemiology, treatment/management options, improved diagnostic assay development, etc.

Ongoing

- Integrate surveillance efforts with those of other WNS working groups.
- Keep consensus standards for WNS testing and interpretation within Canada and with the U.S.
- Assist with timely reporting of WNS testing results to inform the appropriate resource management agencies for release to the broader WNS community.



CANADIAN
WILDLIFE HEALTH
COOPERATIVE

**CREATING A WORLD
THAT IS SAFE AND SUSTAINABLE
FOR WILDLIFE AND SOCIETY**



CONTACT US

Toll-free: 1.800.567.2033
Fax: 1.306.966.7387
Email: info@cwhc-rcsf.ca

www.cwhc-rcsf.ca

