



CANADIAN  
**WILDLIFE HEALTH**  
COOPERATIVE

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

# **ANNUAL REPORT** 2015-2016

GLASS TREE, CHARLOTTETOWN, PE

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# MESSAGE FROM THE CEO

The past year saw significant economic challenges and political change in many jurisdictions across Canada. It was not surprising that the question came up several times of whether or not investment in wildlife health is good public policy. Good public policy makes it easier or possible for people to make good choices. This year's annual report highlights the most important reason for the CWHC's existence, namely to empower people to make good decisions for wildlife and us. Nature is the foundation of life and underpins our Canadian cultural identity, economy, health and prosperity. Many of nature's benefits arise from the interaction of people and wild animals. The activities and people highlighted in this report shows how the CWHC strives to provide the capacity, knowledge and perspectives needed to help people make decisions about the inextricable links between the health of wildlife, people and economies.

The CWHC contributes to good policy by using its scanning surveillance, targeted surveys, research and analytic capacities to define policy problems, gather evidence to identify options for action and facilitate responses. This report describes how the CWHC helps government and individuals make good choices through increased awareness of the epidemiological situation at the interface of people and nature and by providing assurances that threats are rapidly detected and properly assessed. In the past year, the CWHC has focussed effort and expertise on some major Canadian policy dilemmas such as climate change preparedness, globalized movement of disease, harmonization of wildlife health programs across Canada and around the world, and the trade-offs of development and environmental health. We could not have this breadth of activity or effect if it were not for the network of expertise and highly qualified people who support our vision and mission.

The unparalleled support of our host-institutions; dedication of our faculty, staff, students and associates; ongoing partner support and ever-expanding network of collaborators allow the CWHC to be a cost-effective, cross-Canada program that can be rapidly mobilized for emerging needs while working hard towards a vision of protecting and promoting wildlife health. I want to take this opportunity to thank all of these people and programs for their amazing effort and support. I think, after reading this report, you will agree that not only is investment in wildlife health good public policy, it is essential to protecting what Canada values.

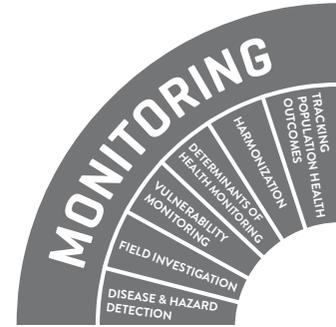
**CRAIG STEPHEN** DVM PhD  
CHIEF EXECUTIVE OFFICER  
CANADIAN WILDLIFE HEALTH COOPERATIVE

# MONITORING



## OVERVIEW

“Providing assurances and early warning through national capacity and expertise”



The CWHC is an observatory. Observatories are infrastructures that provide an extensive view of their surroundings. Observing is the cornerstone of what we do and monitoring is the foundation of our capacity to observe.

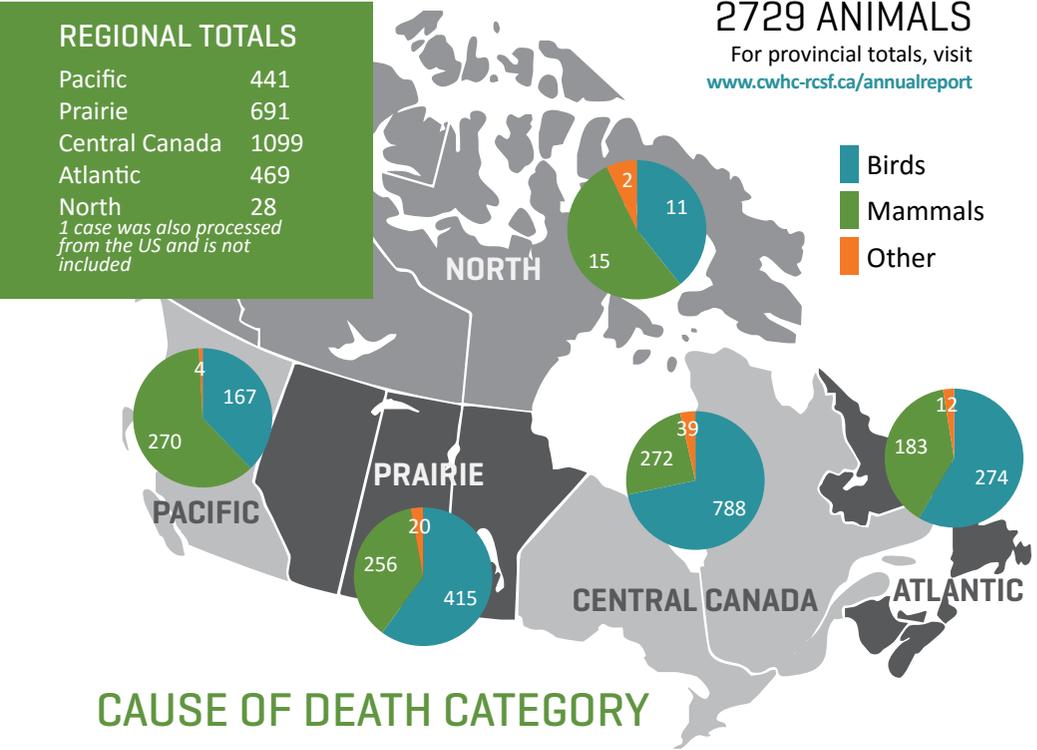
We monitor for changes in wildlife health by providing a cross-Canada infrastructure and expertise to support the diagnostics needs of a national surveillance program. By supplementing capacity to actively track threats and investigate their meaning we link and integrate the observations to develop a national view of the wildlife health situation.

In some cases, our monitoring activities provide assurances to Canadians and trading partners that our environments, animals and products are safe. In other cases, it provides early warning signals that new threats are emerging or known threats are coming under control. Wildlife health monitoring provides a set of observations and signals that have relevance for conservation, public health, agriculture, recreation, cultural enjoyment of nature and economic development. It provides a very extensive view of the interface of people, animals and our shared environments.

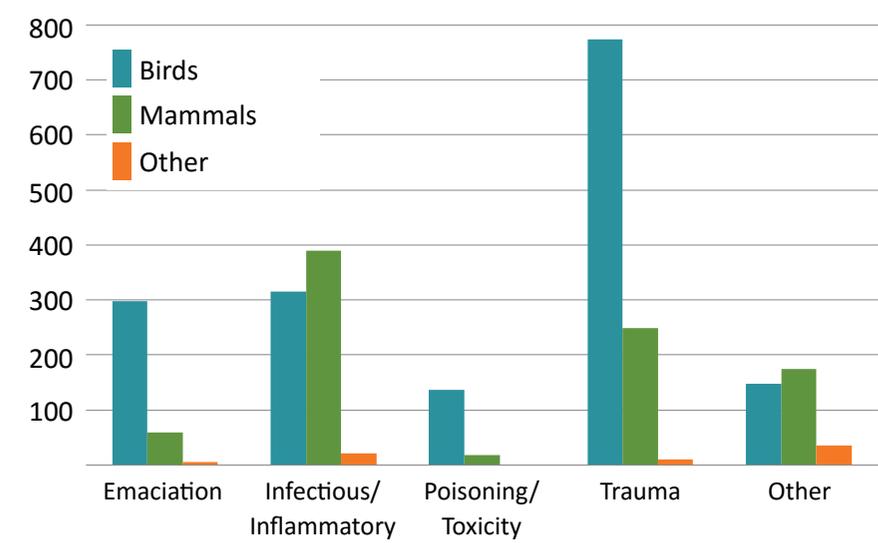
## ACTIVE FUNCTIONS

- Harmonization
- Field investigation
- Disease & hazard detection

## SCANNING SURVEILLANCE



## CAUSE OF DEATH CATEGORY



**PLEASE NOTE:** An additional 98 cases submitted to CWHC in 2015 are still pending cause of death determination; 56 birds, 37 mammals, and 5 other species. ‘Other’ diagnoses include neoplastic, metabolic, and degenerative diseases as well as those cases where no cause of death could be determined.

**7105**  
ANIMALS EXAMINED

A total of 7105 animals were examined in our targeted and scanning surveillance programs

## SELECTED TARGETED SURVEILLANCE

### AVIAN INFLUENZA

Examined	5284
Positive	524

### CHRONIC WASTING DISEASE

Examined	316
Positive	26

### RABIES

Examined	1242
Positive	25

### WEST NILE VIRUS

Examined	1775
Positive	46

### WHITE NOSE SYNDROME

Examined	281
Positive	17

For more information visit [www.cwhc-rcsf.ca/annualreport](http://www.cwhc-rcsf.ca/annualreport)

# MONITORING

## AIV SURVEILLANCE PROGRAM

The North American poultry industry reeled this past year from the introduction of a new variant of highly pathogenic avian influenza of wild bird origin. To help avoid similar occurrence, the CWHC undertook several initiatives to improve the contribution of wildlife health monitoring to avian influenza preparedness and prevention such as:

- Harmonizing a national performance standard: Targets for sample sizes, timeliness of diagnostics and speed of reporting were collaboratively developed and later assessed by the CWHC to foster equivalent surveillance across the country.
- Providing surge capacity: CWHC regional centres secured additional funds and partnerships to expand the number of birds that could be examined in British Columbia, Saskatchewan and Ontario.
- Improving communications: The CWHC piloted an avian influenza portal that streamlined and centralized access to diagnostic, social media and research results; and linked with the CFIA's avian biosecurity advisory council.
- Innovating new approaches to finding environmental signals: CWHC British Columbia secured funds to develop new genomic tools to find evidence of highly pathogenic AI in wetland sediments as well as incorporate waterfowl fecal surveys to increase the scope and scale of surveillance. CWHC Ontario/Nunavut incorporated wild turkeys into its surveillance net.

## TRAUMA

CWHC scanning surveillance confirmed that trauma is an important and ongoing cause of wildlife deaths. Collisions with cars and windows, incidental by-catch and predation by cats are causes of death that are avoidable by changing how we house our pets, design our infrastructure and navigate our roads. The CWHC has used its surveillance results to motivate organizations to modify their techniques to avoid unintended injuries, such as in the case of reducing raptor entanglement with fur bearer trapping gear. We have supported other groups advocating for pet care practices that help protect cats and wildlife by keeping cats indoors. Our monitoring work has identified situations where trauma can be an impediment to species recovery, such as for the mainland moose in Nova Scotia. Ongoing work also aims to reduce trauma and promote a humane death of hunted species, including the work of our Atlantic regional centre with Inuit communities involved in the bowhead whale hunt.

## ENVIRONMENTAL CONTAMINATION

Whether intentional or not, contaminants negatively impact Canadian wildlife. At least 130 cases submitted to the CWHC in 2015 were determined to have died of poisoning.

CWHC-Western/Northern found that poisoning is the most common cause of death in bald eagles in the Prairies. Poisoning and trauma were equally common in golden eagles. The majority of cases were due to organophosphate/carbamate insecticides or lead toxicity. CWHC Québec helped investigate the risk to raptors and people from lead exposure through ingestion of wild game hunted with lead ammunition. Eagles are susceptible to these poisons because they scavenge animals that have died at the hand of pest control poisons or have been hunted with lead ammunition. Public outreach to increase awareness about illegal poisoning and banning the use of lead ammunition and fishing sinkers may help mitigate these problems.

CWHC Québec investigations of causes of death in beluga in the St. Lawrence River Estuary continues to highlight environmental threats to conservation. Changes in food webs from climate change, disturbance from recreational watercraft, and pollution combine to challenge these whales. Recent findings of three animals with both male and female reproductive organs plus higher than expected losses of newborn calves or their mothers raises questions about the effects of new pollutants in the St. Lawrence system. CWHC findings contribute to efforts to protect beluga from human caused environmental threats.

STAFF



DARLENE WEEKS  
CWHC ATLANTIC

Darlene Weeks has worked with CWHC Atlantic since May of 2001. She was hired initially as the Communication Coordinator for the regional West Nile Virus Surveillance Program and now works as a Wildlife Pathology Technician. What she loves most about her job is working in the necropsy lab and the teaching atmosphere, learning more about wildlife species, data management and communicating with the general public and supporting agencies. Darlene has a BSc. in Agriculture (Animal Science) from the Nova Scotia Agricultural College / Dalhousie University. She grew up in New Brunswick but moved to Prince Edward Island to work with the CWHC. She lives there with her husband Marvin, their daughter Meredith and 2 golden retrievers, Hudson and Halle.

# ASSESSMENT



## OVERVIEW

“Analyzing and integrating diverse observations to tackle wildlife health issues”

To tackle the problems linked to wildlife health, a wide range of issues need to be taken into account, various partners need to be involved, and a strong evidence base is essential. The CWHC assessment functions integrate, analyse, and summarize our diverse observations into information that can help our partners and stakeholders make decisions. In some cases, this assessment helps people answer, “why did this animal die?” In other cases, it answers, “is Canada free of this disease?” Increasingly, we are asked to answer, “should we worry?” Using skills ranging from pathology, to epidemiology, to risk communication, the CWHC assessment functions manage wildlife health information to document the current state of wildlife health as well as forecast what we need to prepare for. Our faculty, staff, students, and associates contribute to our assessment functions through research that determines the significance of their diagnostic findings and options for response. Our national office continues to develop new analytical methods to make better use of the wealth of information generated by the CWHC and new information technology to speed its synthesis and analysis.

## ACTIVE FUNCTIONS

- Health information management
- Regulatory reporting
- Alerts, trends, and risk reporting



## STATE OF WILDLIFE HEALTH REPORTING

The past year reminded us that we are still in the era of emerging infections. New variants of avian influenza, the introduction of snake fungal disease, the expansion of white nose syndrome and the looming threat of salamander chytrid disease re-enforced the need to better prepare Canadian wildlife and society for the inevitable incursion of infectious diseases, especially in an era of when climate change is expected to increase the frequency and variety of emerging infections.

Emerging infections have readily captured the interest of science, the public and government but non-infectious and chronic diseases, especially those linked to pollution, remain a constant threat to wild animals. Poisoning of raptors, suggestions of estrogenic mimic effects on whales, and contamination of traditionally harvested fish and wildlife are important reminders that a comprehensive wildlife health program must be interested in environmental contamination and means to reduce wildlife exposure. This was perhaps nowhere more obvious than in discussions and debate around energy production and transmission in Canada. New investment into effective ways to evaluate the unintended consequences of energy and other resource development on wildlife health is critical to provide an ongoing evidence base to assess and manage risk.

The theme of unintended and unexpected consequences was common throughout discussions around the implications of climate change for wildlife health. The CWHC network has generated several lines of evidence showing that we can expect changes in both infectious and non-infectious diseases as climate changes.



MARNIE ZIMMER  
CWHC WESTERN/NORTHERN

Marnie Zimmer received her BSc in Land Use and Environmental Studies/Biology from the University of Saskatchewan in 1998. She began working for the CWHC in June of 1998 on the avian botulism project, and since that time, she has worked on a number of research projects including monitoring of northern leopard frogs, West Nile and Avian Influenza virus surveillance in Saskatchewan and Chronic Wasting Disease surveillance and research. She currently divides her time between office management, research projects and assisting with necropsies.

# ASSESSMENT

## STATE OF WILDLIFE HEALTH REPORTING (CONT.)

Our team's studies in northern Canada provide a bellwether of what we might expect in the rest of Canada. Previously unrecognized diseases and altered parasite lifecycles in northern wildlife are being regularly linked to changing climatic conditions. Similar signals are now being documented in more southern latitudes. Strategies to not only use wildlife signals to forecast risks to people and economies but also to identify vulnerable wildlife populations in advance of harms are urgently needed to keep up with the pace of climate change.

As new techniques and expanded surveillance efforts continue to discover new hazards in wildlife, there is a concurrent need to improve how we assess and communicate risks. There is a growing expectation that the conservation and social implications of a diagnosis accompany reports of new pathogen or pollutant discovery. There is also growing frustration with the lack of tools and techniques available to prevent and mitigate the effects of wildlife disease. The management era of "detect and respond" is evolving to the era of "anticipate and prevent" and wildlife health science and practice is innovating to support this evolution.

## QUARTERLY AND REGULATORY REPORTING

Detection and assessment are key parts of the surveillance cycle, but they remain ineffective without the means to rapidly and regularly communicate their findings. As Canada's national focal point for wildlife health, the CWHC regularly updates the Canadian Food Inspection Agency to support its reporting requirements to the World Animal Health Organization (OIE). These reports help to protect the Canadian agriculture industry's access to international markets by documenting the nation's animal health status. They also support expectations under international agreements such as the Convention on Biological Diversity and International Health Regulations for countries to be aware of environmental threats.

This year saw the roll-out of our quarterly surveillance reports that not only track a standard sub-set of diseases over time, but also describe the numbers and distributions of animals examined by our scanning surveillance system and their general causes of death. The reports provide summaries and web links to wildlife health issues discovered or assessed by the CWHC, our partners and others. By placing these reports on our website and sending them to targeted stakeholders, we aim to increase the breadth and timeliness of wildlife health knowledge. In addition to these communication tools, the CWHC pan-Canadian network sends timely and targeted messages about emerging and urgent events to facilitate prompt response by the appropriate agencies. Our health information management system provides all of these reporting mechanisms to support Canada meeting its international obligations while helping local agencies manage wildlife health.

## STRATEGIC EARLY WARNING AND HEALTH INTELLIGENCE

The joint FAO-OIE-WHO Global Early Warning System for Emerging Diseases stated that "obtaining information about wildlife events and integrating them into early warning systems as regular activities is the first step towards better disease intelligence and risk assessment at the animal/human/ecosystem interface that will improve early warning and support response when relevant." In response, the CWHC is developing new health information management and health intelligence capacity.

For example, an avian influenza information portal has been developed to centralize and speed sharing of Highly Pathogenic Avian Influenza (HPAI) information with regulators and farmers to improve situational awareness and support timely biosecurity activities. Similarly, quarterly surveillance updates highlighting trends in selected diseases and presenting information on emerging wildlife health issues are being produced and shared with supporting agencies and interested stakeholders. These messages were further distributed through CWHC social media.

In addition to specific activities and outputs the CWHC is also evolving its national disease database into a health intelligence system capable of tracking incident- and event-based data. This new Wildlife Health Intelligence Platform (WHIP) will support Canadian wildlife health needs for disease assurance and enhance its competitiveness by augmenting current surveillance systems with new technology and information streams to: (1) trigger early response; (2) meet growing expectations to include wildlife disease when giving assurances of national disease situations and (3) improve capacity to adapt to climate and environmental change through strategic early warning.

# ASSOCIATES



**HELEN SCHWANTJE**  
BC GOVERNMENT/CWHC BC

Helen Schwantje is the Wildlife Veterinarian for British Columbia (BC) and has been responsible for the BC Wildlife Health Program since 1992. The Program provides wildlife veterinary science advice and services, including the diagnosis of wildlife and zoonotic diseases, wildlife disease surveillance and species specific health assessments, focusing on species at risk and their conservation. She graduated from the Western College of Veterinary Medicine in 1981, and went on to complete a Masters in veterinary pathology with a specialty in wildlife disease. Helen has worked on numerous wildlife health projects in New Zealand, Australia, the United States and northern Canada.

## DISEASE & HAZARD DETECTION

CWHC – Québec Region is collaborating with Fisheries and Oceans Canada, local Hunters and Trappers Committees, the Fisheries Joint Management Committee, and the University of Saskatchewan to investigate the health of belugas in the Beaufort Sea. Health assessments of beluga whales harvested as part of subsistence hunting by Inuvialuit communities includes sampling for contaminants, diet studies and overall animal health. This provides an indication of the condition of the beluga population and also helps communities to identify and address food safety issues related to the consumption of mipku (dried meat) and muktuk (skin and blubber). During the summer of 2015, a total of 21 harvested whales were examined by veterinary pathologists. Overall, the animals examined appeared to be in very good health even if the body condition of some of these beluga was sub-optimal. Contributing to over 3 decades of monitoring of beluga whales in the region, the CWHC will continue this work in the summer of 2016.

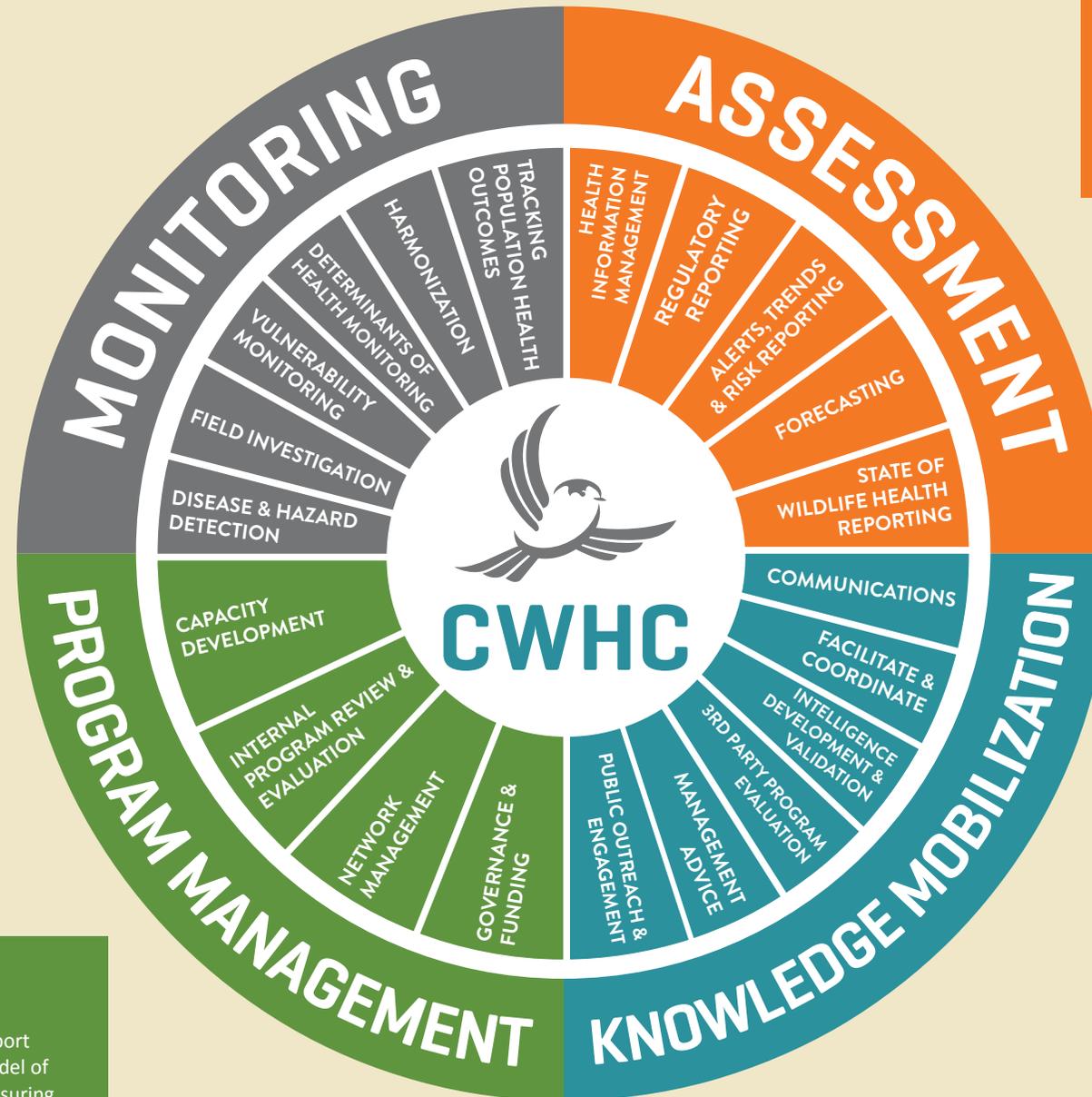
## FIELD INVESTIGATION

Caribou are important to healthy ecosystem function and also vital to many indigenous people as a source of food and culture. But caribou herds across the country are in decline, and some mountain and boreal caribou herds are threatened or endangered. Infectious diseases and other determinants of health play critical roles in caribou population status, affecting both survival and reproduction. Dr. Susan Kutz and her team in the University of Calgary (CWHC Alberta) are leading initiatives to monitor the health of caribou. Their work evaluates caribou for exposure to, or infection with, bacterial, viral, and parasitic diseases, and other indices of health related to chronic physiological stress, immunity, nutrition, and toxicology. Preliminary results have identified potential threats to caribou health including nutrient deficiencies, infection with parasites and the presence of the bacterial pathogen *Erysipelothrix rhusiopathiae*, previously unknown in free-ranging caribou. The CWHC aims to link a better understanding of the determinants of caribou health to conservation initiatives.

## NETWORK MANAGEMENT

“Innovation Through Collaboration” the title of the CWHC report to host institutions exemplifies the unique and successful model of the CWHC. Building and strengthening the CWHC network ensuring ongoing collaboration in support of wildlife health is a key CWHC program activity.

# CWHC CORE FUNCTIONS



## ALERTS, TRENDS & RISK REPORTING

Under the leadership of CWHC Associate Dr. Colin Robertson the CWHC is developing innovative tools to monitor volunteered signals such as news sources, technical and scientific publications and citizen science projects. These data will form an information set that combined with our core diagnostic surveillance efforts and targeted research will be used to analyze root causes of population health changes and disease movements.

## FACILITATE & COORDINATE

As white nose syndrome (WNS) continues to expand, the CWHC is expanding the national WNS program to improve prevention and create recovery strategies. In partnership with Environment and Climate Change Canada, our national WNS coordinator shares information on best practices for population monitoring and recovery as well as validating recommendations in field disinfection protocols. Partnerships with Parks Canada has resulted in both development of protocols for population monitoring and videos on disinfection.

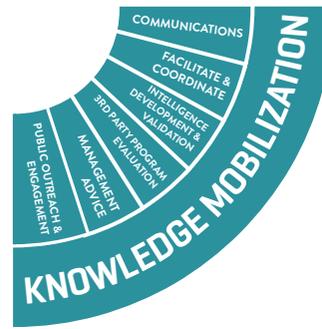
## INTELLIGENCE DEVELOPMENT & VALIDATION

Getting ahead of a disease means understanding the underlying drivers of its behavior. CWHC-Western/Northern studies how deer landscape use affects exposure to the prion causing chronic wasting disease (CWD). Rugged terrain and woodlands are highly used by deer, creating higher risks of environmental contamination, but feeding opportunities at croplands allow for more frequent close contact between deer to facilitate prion transmission. This team also discovered young deer may travel more than 100 kms. These findings inform CWD control planning.

# KNOWLEDGE MOBILIZATION

## OVERVIEW

“National expertise and usable advice to turn outputs into action”



CWHC surveillance activities culminate in converting our information and assessment into usable advice, technical information, and facilitating processes to turn our outputs into action. This includes spearheading strategies, such as the National Wildlife Health Strategy presented to Federal government partners in 2015, integrating information with our partners to develop a national perspective on wildlife health issues, and facilitating and coordinating management and assessment plans, such as the Inter-agency Wild Bird Avian Influenza Survey and ongoing surveillance for West Nile virus in wild birds. The CWHC also maintains a national health intelligence platform that is used by the Government of Canada when reporting to trading partners, as well as to identify trends and support applied research to inform management and public health decisions.

## ACTIVE FUNCTIONS

- Communications
- Facilitate and coordinate
- Intelligence development and validation
- 3rd party program evaluation
- Management advice
- Public outreach and engagement

## FISH HEALTH FRAMEWORK

Salmon health is a policy objective for Fisheries and Oceans Canada (DFO) but the lack of a health definition and agreed upon metrics to consistently and transparently establish if a population is healthy complicates evidence-based policy assessment. The CWHC is collaborating with DFO to determine whether current concepts of population health can meet DFO’s policy need for salmon health. This definition aims to account for the cumulative nature of health by collaboratively creating a measurable and consistent salmon health management target that is defensible and achievable. We are working to support a unified salmon health policy that links policy needs across scientific and management divisions.

## CLIMATE CHANGE

The effects of climate change are evident and ongoing in Canada. Given the uncertainties associated with climate change it is critical to systematically scan the environment for early warning signals that could inform decisions in advance of harm to people, wildlife and economies. An early warning system empowers individuals and organizations to respond in a timely and appropriate manner in order to avoid, reduce or mitigate harm. Wildlife has a long history of serving as sentinels of emerging risk. The CWHC advocated for using a pan-Canadian wildlife health network to provide climate ‘outposts’ that collect biologically meaningful information from diverse biogeoclimatic zones to give us insights into the effects of climate change on epidemiological patterns and new risks.

# ASSOCIATES



OWEN SLATER  
UNIVERSITY OF CALGARY

Owen Slater is an instructor at the University of Calgary, Faculty of Veterinary Medicine and provides freelance wildlife veterinary expertise to various organizations and governments. He obtained his degrees (BSc., DVM) from the University of Guelph and has spent his career working with captive and free ranging wildlife, primarily in North America and East Africa. Owen provides technical wildlife veterinary expertise to the Alberta node of the CWHC, its partners and collaborators in the fields of wildlife diagnostics, capture and transport of wildlife and wildlife health surveillance.

# KNOWLEDGE MOBILIZATION

## CLIMATE CHANGE (CONT.)

The role of wildlife as bio-indicators is anticipated to increase given the expectation of changing distributions and burdens of pathogens and pollutants in the face of climate change. Wild animals can also signal vulnerabilities in social determinants of health and resilience. These contributions are made through their role in food security, income, social capital and as a form of primordial prevention. Climate change is anticipated to impact the distribution and abundance of wildlife, thereby affecting their interactions with people and domestic animals. The CWHC presented at Canadian and US climate change conferences and worked with government to increase awareness of the place for wildlife health in climate change planning and adaptation as well as to develop strategies that benefit from wildlife health information to better prepare us for the effects of climate change. The CWHC presented the only voice for wildlife health at a stakeholders meeting to develop climate adaptation advice for First Ministers.

## A NATIONAL FRAMEWORK FOR WILDLIFE HEALTH

Wildlife diseases are becoming more frequent and urgent management concerns, affecting conservation and safe, sustainable and confident use of resources. Diseases, and their effects, are expected to increase with climate change, urbanization and natural resource development. The growing demands for cumulative effects management is creating new expectations to be able to measure, monitor and maintain wildlife health. Despite these needs, Canadian wildlife health capacity has shrunk in the last decade and has not taken full advantage of new approaches and partnerships. A new strategy is needed to harmonize capacity across Canada; use shared platforms, infrastructure and expertise more efficiently; and bolster the ability to quickly detect emerging threats while promoting new partnerships and systems to sustain healthy populations in advance of harm.

The CWHC drafted a Framework for Action for a National Fish and Wildlife Health Program. Its goals are to:

- Strengthen Canada’s capacity to identify and reduce wild animal health risks.
- Support programs and policies whose specific objective is to sustain healthy wild animals by reducing disparities and differences in capacity across the country.
- Encourage population health strategies that anticipate the needs of fish and wildlife health policy and practice in the face of rapidly changing social and environmental conditions.
- Improve efficiency and effectiveness of public services by working together.

The vision is to support a national independent network that serves as a national focal point for wild animal health. The goal is to ensure efficient use of highly specialized and expensive human resources; improve communication across government agencies and with the public; focus information in a single program rather than across Ministries; enhance collaboration among various levels of government; increase timeliness and flexibility in responding to emergencies and emerging issues and enable longer-term planning to anticipate risks and communicate vulnerabilities in advance of harms.

### COMMUNICATE



57  
peer reviewed publications

10  
technical reports

60  
academic presentations  
at  
34  
national and international  
conferences and meetings

### BUILD CAPACITY



contributed to  
**21 courses**  
veterinary, graduate, or college

Supported and trained  
**48 students**  
graduate & summer  
+  
16  
teaching seminars

### HARMONIZE



participated in  
**74**  
committees, working groups,  
or meetings

27 international  
31 national  
16 regional

### ENGAGE



15  
presentations to public or  
partners

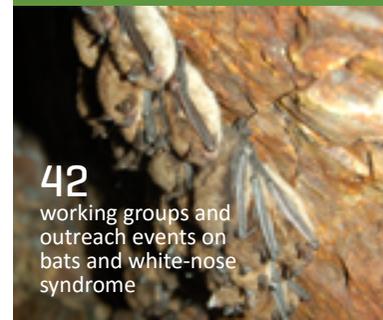
38 media stories  
55 blog posts  
+ 407 Facebook likes  
105 daily Twitter reach

# GRADUATE STUDENTS



**DIANA SINCLAIR**  
CWHC ONTARIO/NUNAVUT

Diana received her doctorate of veterinary medicine at the University of Guelph and completed a Master of Veterinary Studies in Conservation Medicine program through Murdoch University in Australia. Diana started graduate work at the University of Guelph in 2013, constructing a model of the Ontario wildlife health network to outline the movement of health data. By gathering wildlife health professionals from different aspects of the network, she aims to create a definition of wildlife health and identify key factors that can be used to monitor wildlife health. This research will lead to a better understanding of the communication that happens in the Ontario wildlife health network as well as factors that can be used to create proactive health management strategies for wildlife conservation.



42  
working groups and  
outreach events on  
bats and white-nose  
syndrome



19  
reports, working groups,  
or outreach on wildlife  
health in the arctic

# PROGRAM MANAGEMENT

## OVERVIEW

“Transparent, accountable and responsive programs”

As an independent science network the CWHC is uniquely suited to address wildlife issues that cross jurisdictional responsibilities by (i) filling jurisdiction gaps in fish and wildlife health management to create a single comprehensive national program; (ii) strengthening interactions between governments and citizens; and (iii) providing independence that facilitates public trust. Our program management expertise effectively translates policy goals and social expectations into program performance.

The CWHC strives to promote good governance in wild animal health with openness, inclusiveness and integrity; facilitating effective collaboration; and promoting a performance orientation in program delivery.

## ACTIVE FUNCTIONS

- Capacity development
- Internal program review and evaluation
- Network management
- Governance and funding



## STAFFING

### CWHC NATIONAL OFFICE

**Craig Stephen** - Chief Executive Officer  
**Patrick Zimmer** - Chief Operating Officer  
**Kevin Brown** - Information Services Manager  
**Bevan Federko** - Programmer/Analyst  
**Molly Kirk** - Knowledge Mobilization Officer  
**Erin Moffatt** - Data and Communications Technologist  
**Nadine Kozakevich** - WCVN Finance Manager  
**Jane Parmley** - Epidemiologist (*Ontario/Nunavut*)  
**Jordi Segers** - National White-Nose Syndrome Coordinator (*Atlantic*)

### CWHC BRITISH COLUMBIA

**Chelsea Himsworth** - Regional Director  
**Helen Schwantje** - Regional Director  
**Hein Snyman** - Veterinary Pathologist  
**Stephen Raverty** - Veterinary Pathologist  
**Victoria Bowes** - Veterinary Pathologist  
**Ann Britton** - Veterinary Pathologist  
**Glenna McGregor** - Veterinary Pathologist

### CWHC ALBERTA

**Susan Kutz** - Regional Director  
**Samuel Sharpe** - Veterinary Pathologist  
**Mani Lejeune** - Parasitologist  
**James Wang** - Lab Manager

### CWHC WESTERN/NORTHERN

**Trent Bollinger** - Regional Director  
**Lorraine Bryan** - Veterinary Pathologist  
**Marnie Zimmer** - Wildlife Biologist

### CWHC ONTARIO/NUNAVUT

**Claire Jardine** - Regional Director  
**Erin Scharf** - Wildlife Technician  
**Doug Campbell** - Veterinary Pathologist  
**Lenny Shirose** - Biologist  
**David Cristo** - Communications and Project Coordinator

### CWHC QUÉBEC

**Stéphane Lair** - Regional Director  
**Kathleen Brown** - Lab Manager  
**Judith Viau** - Wildlife Technician  
**Viviane Casaubon** - Wildlife Technician  
**Pauline Delnatte** - Veterinary Pathologist/Clinician  
**Rozenn Le Net** - Veterinary Resident  
**Émilie L. Couture** - Veterinary Resident

### CWHC ATLANTIC

**Pierre-Yves Daoust** - Regional Director  
**Scott McBurney** - Veterinary Pathologist  
**María Forzán** - Veterinary Pathologist  
**Darlene Weeks** - Wildlife Technician  
**Fiep de Bie** - Wildlife Technician

# GRADUATE STUDENTS

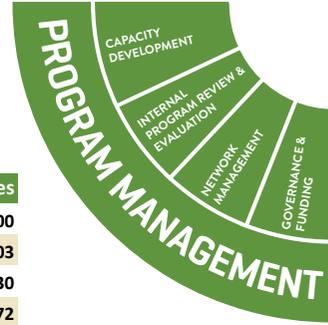


**ROZENN LE NET**  
CWHC QUÉBEC

Rozenn obtained her veterinary degree from the *Ecole Nationale Vétérinaire, Agroalimentaire et de l'Alimentation Nantes-Atlantique*, in France. Rozenn has been involved in different internships in zoo and wildlife health in France, Canada, Australia and the Philippines. She also worked as a veterinarian in a small animal practice before joining the CWHC team in Québec as the new veterinary resident in Wildlife Health Management. Rozenn's interests include the relationship between wildlife health, human health and wildlife conservation.

# PROGRAM MANAGEMENT

## FINANCIALS - REVENUES

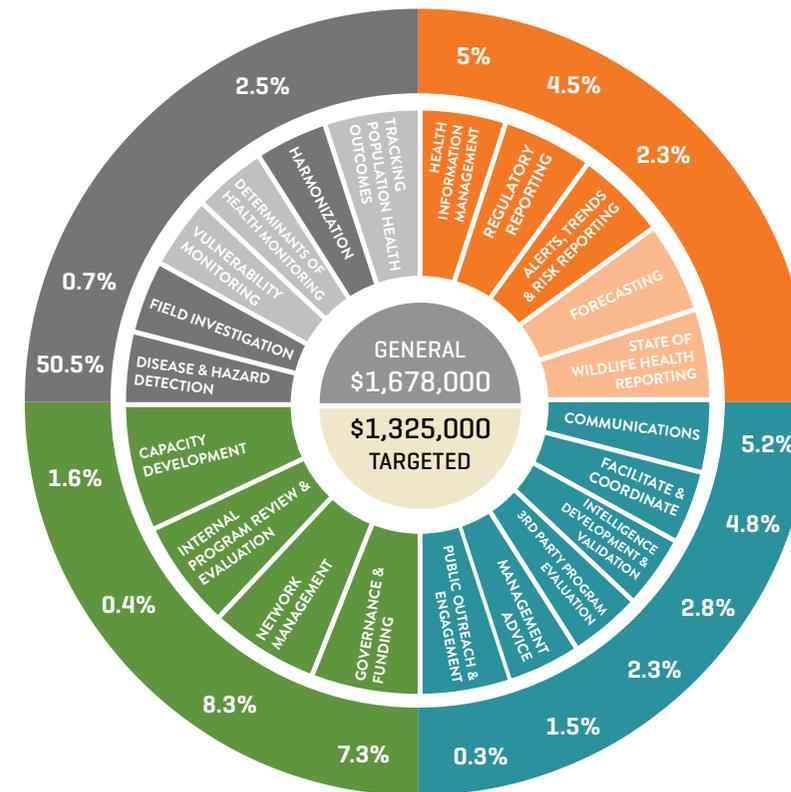


	General	Targeted Programs	Total Revenues
Agriculture and Agri-Food Canada		75,000	75,000
Canadian Food Inspection Agency	200,000	415,403	615,403
Environment and Climate Change Canada	400,000	116,330	516,330
Health Canada - First Nations and Inuit Health Branch	4,972		4,972
Fisheries and Oceans Canada		66,736	66,736
Foothills Research Institute		7,614	7,614
Parks Canada	150,000	39,955	189,955
Public Health Agency of Canada	240,000	9,999	249,999
Alberta - Fish and Wildlife	5,000		5,000
BC Ministry of Agriculture	75,000	29,000	104,000
BC Ministry of Environment	10,000		10,000
BC Ministry of Forests, Lands & Natural Resource Operations	10,000	10,676	20,676
Genome British Columbia		99,600	99,600
Genome Canada		99,600	99,600
New Brunswick - Ministry of Fish and Wildlife	10,259	3,500	13,759
Government of Newfoundland & Labrador	21,711	4,795	26,506
Government of Northwest Territories	16,000		16,000
Government of Nova Scotia	9,500		9,500
Government of Nunavut	15,000	11,316	26,316
Ontario - Ministry of Agriculture, Food and Rural Affairs		50,000	50,000
Ontario - Ministry of Health and Long Term Care	100,000		100,000
Ontario - Ministry of Natural Resources	80,000	50,000	130,000
Ontario Animal Health Network		48,250	48,250
Prince Edward Island - Ministry of Environment	4,735		4,735
Prince Edward Island - Ministry of Health		1,050	1,050
Québec - Ministère des Forêts, de la Faune et des Parcs	90,000	58,784	148,784
Québec - Ministère de la Santé et des Services sociaux	15,000		15,000
Saskatchewan Agriculture and Food		54,983	54,983
Saskatchewan Environment	41,309	24,000	65,309
Sustainable Forestry Initiative		25,000	25,000
Government of Yukon	14,000	16,750	30,750
University of Calgary, Faculty of Veterinary Medicine	125,000		125,000
University of Saskatchewan	50,000		50,000
United States Geological Survey		30,000	30,000
Western College of Veterinary Medicine	11,000		11,000
Miscellaneous Income/Fee-for-service		77,231	77,231
<b>TOTAL REVENUE</b>	<b>\$ 1,698,486</b>	<b>\$ 1,425,572</b>	<b>\$ 3,124,058</b>

## FINANCIALS - EXPENSES

	Core (General)	Targeted Programs	Total Expenses
Salaries and Benefits	1,226,713	693,005	1,919,717
Equipment	3,967	3,265	7,232
Diagnostic Costs	153,977	319,163	473,141
Operations	112,785	23,884	136,669
Travel	45,506	28,895	74,401
Other	18,449	191,072	209,521
Overhead	185,968	92,184	278,151
<b>TOTAL EXPENSES</b>	<b>1,747,365</b>	<b>1,351,468</b>	<b>3,098,832</b>
<b>REVENUE LESS EXPENSES</b>	<b>\$ (48,879)</b>	<b>\$ 74,104</b>	<b>\$ 25,225</b>

## EXPENSES BY FUNCTION



## Efficiency

A health-focused program supports more cost-effective and proactive response, prevention and preparedness against threats compared to investing only in reactions to problems after they emerge.

The CWHC model ensures that no single partner bears the full burden of program support and that investment of any one partner is leveraged by the capacity, infrastructure and expertise secured through the total investment of all. Each funder receives more services than their investment alone could generate, thus allowing the CWHC to meet a wide spectrum of federal, provincial and territorial needs.





# ACKNOWLEDGEMENTS

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## PARTNERS



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