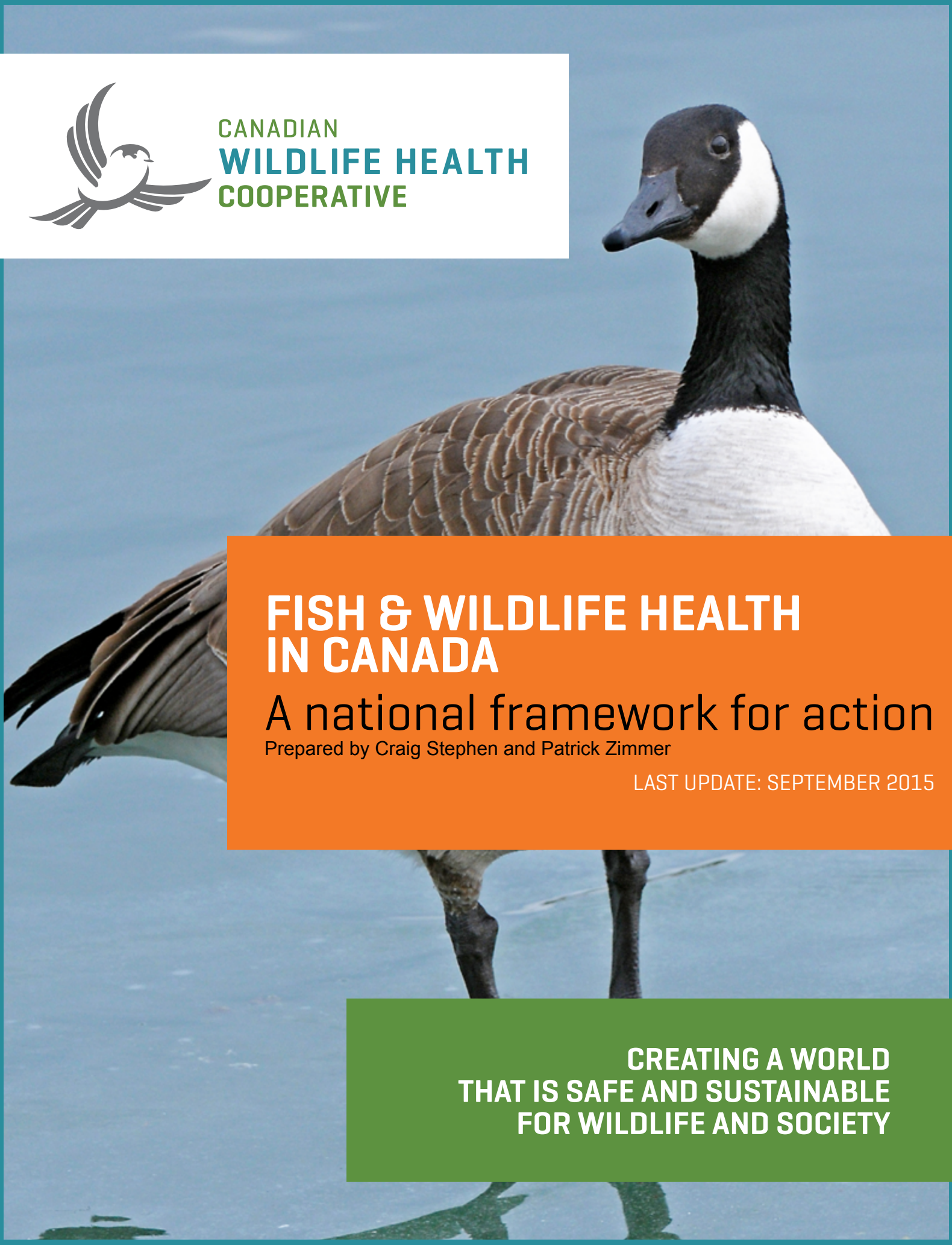


CANADIAN
WILDLIFE HEALTH
COOPERATIVE

FISH & WILDLIFE HEALTH IN CANADA

A national framework for action

Prepared by Craig Stephen and Patrick Zimmer

LAST UPDATE: SEPTEMBER 2015

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

EXECUTIVE SUMMARY

The **purpose** of a National Fish and Wildlife Health Framework for Action is to ensure strong, shared leadership to protect and sustain wild animal health and the values they bring to Canadians by promoting, sustaining, coordinating and integrating infrastructure and expertise in Canada. A national wild animal health strategy must support and sustain capacity that is adequate not only for today's concerns but also tomorrow's challenges. **The strategic goals** for the National Fish and Wildlife Health Action Plan are as follows:

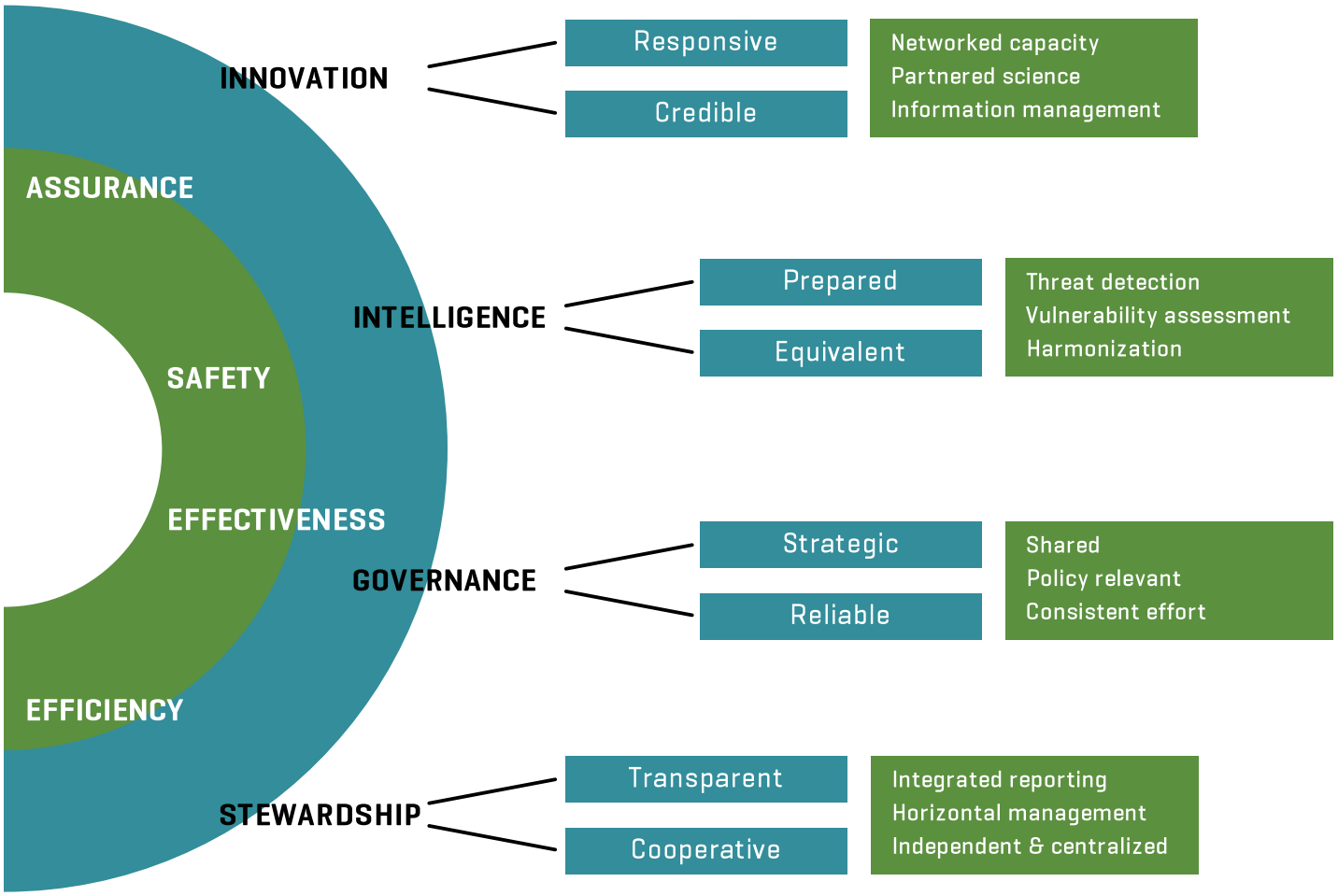
- Strengthen Canada's capacity to identify and reduce wild animal health factors that put conservation, public health or cultural opportunities at risk, and to reduce the economic impacts of fish and wildlife diseases in Canada;
- Develop, implement and assess programs and policies whose specific objective is to sustain healthy wild animals and the positive contributions they make to Canada by reducing disparities and differences in fish and wildlife health capacity across the country;
- Encourage population health strategies that improve anticipation of fish and wildlife health policy and practice needs in the face of rapidly changing social and environmental conditions.
- Improve efficiency and effectiveness of public services by working together

Healthy fish and wildlife define the very essence of our country. The majority of Canadians highly value wild animals and many depend on them for income, food, and community cohesion. The direct economic contributions of wildlife can be estimated to be at least half of the contribution of the total agriculture and the agrifood sector. The value of their ecological services is substantially more. Global, national and local changes are creating new and unexpected fish and wildlife health impacts. This can be seen in the importance of wildlife as sources of human diseases; reduced access and safety of traditionally harvested foods; increased effects of diseases on conservation; changes in the quality and abundance of fisheries; and increased disease flow between wildlife and farmed animals.

A national independent science network for fish and wildlife health needs to be sustainably funded to; (i) provide a national focal point for wild animal health issues; (ii) ensure efficient use of highly specialized and expensive human resources; (iii) improve communication across government agencies and with the public at large; (iv) focus information in a single program rather than across Ministries; (v) enhance collaboration among various levels of government; (vi) increase timeliness and flexibility in responding to emergencies and emerging issues and (vii) enable longer-term planning to anticipate risks and communicate vulnerabilities in advance of harms.

Key areas of focus for the action plan are Health Intelligence, Stewardship, Innovation and Governance. Six core actions are: (i) Support and network existing regional centres of expertise to efficiently ensure equitable capacity to track fish and wildlife health and assess their significance for conservation, public health and economic activities. (ii) Enhance capacity to anticipate, interpret and communicate health management needs; (iii) Provide a secretariat to manage the network, assemble a national perspective of the state of fish and wildlife health and ensure timely sharing of policy-relevant knowledge; (iv) Formalize and support strategic partnerships for cost-effective program delivery; (v) Assemble a multi-agency government committee to provide strategic advice and oversight to a national program; and (vi) Develop and fund 5-year strategic plans and goals for national fish and wild animal health activities.

OVERVIEW:
FEDERAL FISH AND WILDLIFE HEALTH FRAMEWORK FOR ACTION



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INTRODUCTION

All life forms, including humans, are ultimately connected to all other life forms.
- Canadian Biodiversity Strategy

BACKGROUND

In 2005, the federal, provincial and territorial ministers responsible for Forests, Wildlife, Endangered Species, and Fisheries and Aquaculture recognized the risks posed by wildlife diseases not only to wildlife, but also to human health and Canada's economic sustainability. They subsequently approved the National Wildlife Disease Strategy, which provided a broad framework to respond to wildlife diseases. The Strategy focused on existing or emerged infectious disease and not on disease prevention or preparedness nor on the maintenance of healthy populations. The National Wildlife Disease Strategy has yet to be implemented or funded. In the intervening decade, new science and priorities are demanding threat anticipation to protect assets and values before they are endangered while maintaining capacity to rapidly detect and respond to threats. **The National Fish and Wildlife Health Framework for Action serves to address these evolving needs, better preparing Canada for an uncertain future and ensuring sustainable wild animal health programs required by national and international priorities and obligations**.

For many Canadians, healthy fish and wildlife define the very essence of our country. Healthy wild animals[1] are important to our social and economic well-being. They are essential contributors to and excellent indicators of the health of the environment upon which we depend. The 2012 Canadian Nature Survey showed that Canadians understand that healthy wild animals provide vital life support and security functions and support quality of life.

A national wild animal health strategy needs to sustain capacity that is adequate not only for today's concerns but also tomorrow's challenges. Urbanization, globalization, climate change and other megatrends are creating new and unexpected fish and wildlife health impacts. Evidence of this can be seen in the important role of wildlife as sources of emerging diseases of people; reduced access and safety of traditionally harvested foods; increased impact of diseases on conservation; changes in the quality and abundance of fisheries; and increasing disease flow between wildlife and farmed animals.

Wild animal health is a shared responsibility. The federal, provincial, territorial, municipal, aboriginal, non-governmental, and private sectors all have roles to play in sustaining fish and wildlife health and protecting Canadian values that can be impacted by wild animal disease. Unlike public health and domestic animal health, which are the mandates of specific government agencies with direct budget allocations, wildlife health falls across multiple agencies at several levels of government and is typically not a major budget line item, making resources scarce and responsibilities unclear. Wildlife health lacks a single, clear private interest and its cross-agency relevance makes it easy for one agency to assume another agency will support the efforts needed to address fish and wildlife health obligations. A distinct, sustainable interagency approach is needed to provide Canadians and our international partners with the confidence that wild animal health is equitably managed across Canada.

1. Hereafter, the term wild animals is used to include free ranging, unowned mammals, birds, amphibians, reptiles and fish

Investment in protecting and promoting healthy fish and wildlife pales in comparison to the services they provide to Canadians. Despite ample evidence that health is central to sustaining the socio-ecological value of fish and wildlife, the gap between their value to society and the capacity to protect wild animal health remains large. The Canadian Wildlife Health Cooperative is an innovative public management success story and a unique model for science procurement and partnership that has been providing regional and national wildlife health services in a cost-effective manner for over 20 years. It is a service delivery model for a national fish and wildlife health program that can protect assets linked to wild animal health and harmonize programs across Canada.

The purpose of a National Fish and Wildlife Health Framework for Action is to support strong, shared, leadership to protect and promote wild animal health and the values they bring to Canadians by promoting, sustaining, coordinating and integrating infrastructure and expertise in Canada.

Strategic goals for a National Fish and Wildlife Health Action Plan are:

- *Strengthen Canada's capacity **to identify and reduce** wild animal diseases that put conservation, public health or cultural opportunities at risk, and to reduce the economic impacts of fish and wildlife diseases in Canada*
- *Develop, implement and assess programs and policies whose specific objective is to sustain healthy wild animals and the positive contributions they make to Canada by **reducing disparities and differences** in fish and wildlife health capacity across the country*
- *Encourage population health strategies that **improve anticipation** of fish and wildlife health policy and practice needs in the face of rapidly changing social and environmental conditions*
- ***Improve efficiency and effectiveness** of public services by working together*

The Contribution of Wild Animal Health to Canada

Wildlife disease monitoring, prevention and control are crucial factors for safeguarding biodiversity and public and animal health worldwide
- World Animal Health Organization (OIE)

Canada was built upon the consumptive and non-consumptive uses, nutritional value, ecological roles, and socio-cultural significance of wild animals. The majority of Canadians still highly value fish and wildlife and many still depend on them for the income, food, and community cohesion.

Economic benefits: Accounting for all of the economic contributions of wild animals is notoriously challenging, but their economic importance to Canada can be estimated to be at least half of the contribution of total agriculture and the agrifood sector (based on 2012 Agriculture and Agrifood Canada estimates). These economic benefits require Canadians and our trading partners to have confidence that wild animals are healthy and safe.

The 2012 Canadian Nature Survey[2] estimated that Canadians spent $41.3 billion per year on nature related

2 Available at **http://biodivcanada.ca/default.asp?lang=En&n=2A0569A9-1**

activities. Hunting, trapping and fishing not only contribute to aboriginal culture and rights and the quality of life of many Canadians, but also generate $14-15 billion annually[3]. The value of the seafood sector (excluding aquaculture) was near $15 billion in 2012 while the recreational fishery in 2010 was responsible for $8.3 billion in spending. Over half of all Canadians take part in non-consumptive wildlife oriented activities, like bird or whale watching. Direct tourist expenditures on eco-tourism in British Columbia alone is approximately $1.5 billion dollars per year[4]. Traditional harvest of wildlife continues to be an economically important activity. Wildlife harvest in Nunavut, for example, is worth $40 million a year[5].

Ecological Services: Wild animal contributions to ecological service far outweighs their direct economic benefits. When ecosystem services are compromised, economic and health impacts cost Canadians, industry and governments. The Millennium Ecosystem Assessment noted that biodiversity benefits people through more than just its contribution to material welfare and livelihoods. It contributes to security, resiliency, social relations, health, and freedom of choices and actions. Some of these services are very tangible. Bats, for example, save the agriculture industry billions of dollars in pesticide use because of their voracious consumption of insect pests. Other ecological services are more difficult to quantify. Many Canadians' sense of identify and belonging is linked to their historic and ongoing use of wildlife for work, recreation and spiritual purposes. First Nation and Inuit peoples not only have this close connection to wild animals, but also have treaty and other legal rights that ensure Canada maintains accessible, safe and healthy wild populations. There is growing evidence of the importance of nature in people's sense of community and mental health.

Food and Nutritional Security: Fish and wildlife have been a source of nutrition since the earliest times and continue to contribute to food security and nutrition for many Canadians. Recommendations for seafood consumption to combat heart disease for example, depends on safe and healthy fish to eat. The battle against diabetes and heart disease in aboriginal communities relies, in part, on access to safe traditional foods. Northern food security strategies depend on accessible fish and wildlife that communities are confident can be safely consumed. While wild animal consumption in urban Canada is largely linked to seafood, many rural Canadians rely on hunted and fished animals to meet their nutritional needs.

Sources of Harm: With changing landscapes and climates, new avenues are being created for the movement of pathogens and pollutants into the Canadian environment. These changes are expected to create new risks for conservation, public health and economic activities.

Infectious diseases: Most recently emerged infections had their origin as wildlife diseases. Their large economic consequences have impacted trade, travel, tourism, agriculture, and health care. When the economic impacts have been measured, they reach the billions of dollars. Estimates of potential economic losses due to trade sanctions or pandemics that may arise when wildlife diseases spill over into people or

3 Licensed Hunting and Trapping in Canada. Report of the Standing Committee on Environment and Sustainable Development. Available at: http://www.parl.gc.ca/HousePublications/Publication.aspx?DocId=8045718&Language=E&Mode=1&Parl=41&Ses=2&File=21#intro

4 Wilderness Tourism Association of British Columbia. http://www.wilderness-tourism.bc.ca/value.html

5 Government of Nunavut http://www.gov.nu.ca/eia/documents/nunavut-economy

domestic animals climb to the trillions of dollars. Wildlife health surveillance is a widely accepted tool to forewarn of changing infectious disease threats and provide trading partners with assurances of Canada's animal health status. A robust fish and wildlife disease surveillance system is essential to keeping trade routes open and reducing domestic animals disease control costs at home.

Pollution: Wild animals provide cost-effective early warning needed to protect Canadian's health, industries and environments. Wildlife health surveillance has inspired legislation that has reduced human exposure to contaminants and improved Canada's ability to design, manufacture, use and disposal of chemicals in a safe and efficient manner. Wild animal disease continues to be the 'canary in the coal mine' that helps us identify environmental harms in advance of human illness or economic impacts and support economic activities by showing that no harms exist.

Human-wildlife interactions: As the Canadian population grows, interactions between people, domestic animals and wild animals are expected to increase. As we become increasingly urbanized, adverse human-wildlife interactions will become more common as urban wildlife populations expand while peoples' experience with how to safely interact with wildlife decreases. Providing assurances of safety by properly characterizing the risks to Canadians from wildlife will not only help people feel safe, and thus access the benefits of nature-related activities, but also will help to prioritize public resource use.

As we increase our understanding of the relationship between wildlife, domestic animals and people co-existing in shared environments, we also recognise the complexity of these relationships and the need for a new approach to sustain their contributions and minimize their adverse impacts on Canadians.

The Need for a National Framework and Action Plan

Canadians are starting to learn that wildlife is not merely a source of personal pleasure… our wildlife is an excellent indication of the health of the environment on which we depend, and ….are important to our social and economic well-being.
- Hinterland's Who's Who

Our world is changing very rapidly; human population growth, urbanization, competition for natural resources, globalization of markets, climate change, unprecedented movement of people and animals, and conversion of natural spaces for food production are some of the pressures being exerted at the human-wild animal interface. These pressures are threatening the positive contributions wild animals make to Canadian society as well as creating new threats to our well-being. Canada's 2013-2016 Federal Sustainable Development Strategy[6] recognizes the need to protect and sustain the links between nature, the economy and society. The Strategy's theme of Protecting Nature and Canadians aims to reduce economic and health harms to Canadians associated with emergencies and incidents that threaten Canadian biodiversity. Faced with these challenges, policies and practices must be reconsidered and new tools, forms of cooperation and synergies between stakeholders must be found.

6 Available at www.ec.gc.ca/dd-sd/default.asp?lang=En&n=A22718BA-1

International Obligations

A comprehensive fish and wildlife health strategy is essential for Canada to meet its international human and animal health obligations. For example, both the World Animal Health Organization's (OIE) *Terrestrial Animal Health Code* and the World Health Organization's *International Health Regulations* require that countries maintain surveillance and response capabilities that can immediately detect and respond to any unusual or unforeseen event that may become a significant human or animal health threat. The OIE strongly encourages its members to put efficient monitoring systems in place and notify outbreaks of diseases in wild animals, as is the practice for all other animals. The consequences of non-compliance with international human or animal health regulations will reach individuals and businesses through increased export restrictions on Canadian products. Wild animal health programs are an essential defense to trade restrictions that are imposed on Canadian exports under the guise of sanitary and phytosanitary (SPS) measures pursuant to a number of trade agreements, such as the North American Free Trade Agreement (NAFTA) and the WTO. Fish and wildlife health investment arising from a national strategy is necessary to ensure that Canadian SPS measures are sufficient to prevent the introduction of novel risks to animal and human health.

A national fish and wildlife health strategy is an essential component of efforts to comply with many of the international environmental conventions to which Canada is a signatory. The *Convention on Biological Diversity* requires that signatories be able identify and monitor circumstances likely to adversely impact conservation and sustainable use of biological diversity. Both the Rio Declaration and NAFTA obligate Canada to have capacity to detect threats and impacts to support environmental assessments and sustainable development. The *Convention on International Trade in Endangered Species of Wild Fauna and Flora* relies on national surveillance and regulations to ensure that the health risks of the wildlife trade are minimized.

Domestic Obligations and Program Priorities

Wild animal health is a shared provincial-federal responsibility. A coordinated and harmonized approach across the country is needed as failures in wild animal health within one province have the potential to adversely impact citizens or species in another province. There is, however, no legislation or plan that spells out roles and responsibilities of the various levels of government in terms of inter-jurisdictional cooperation in wild animal health.

A National Fish and Wildlife Health Framework for Action provides a cost effective means to addresses section 4.7.4 of the 2013-2016 Federal Sustainable Development Strategy requiring federal Ministries to provide information to reduce the risk of, and advice in response to, environmental risks including the occurrence of wildlife disease. Although most regulations explicitly related to wildlife are provincial, the federal government can play a key role where issues of national concern arise, including those related to health or the environment. In addition, the federal government has jurisdiction over transboundary species and fish.

Fish and wildlife health issues overlap with the mandates of many departments and agencies at each level of government. At the federal level, these include the Canadian Food Inspection Agency (CFIA), Parks Canada, Public Health Agency of Canada (PHAC), Agriculture and Agrifood Canada (AAFC), Environment Canada

(EC), Health Canada (HC), and Fisheries and Oceans Canada (DFO). Despite the concurrent jurisdictions and mandates, there is no regulatory or policy framework guiding federal-provincial cooperation or federal coordination on fish and wildlife health. Current approaches to fish and wildlife health in Canada are best characterized as ad hoc and reactive. Capacity, infrastructure and expertise vary across jurisdiction. As a result, the gaps and duplication found in the existing regulatory frameworks increase Canada's vulnerability to fish and wildlife health threats. A national fish and wildlife health strategy will not only prevent many issues from arising, but will better ensure that responses to fish and wildlife health issues are effective and timely through proactive planning.

The existing regulatory frameworks for animal and human health are designed around known disease threats. Canadian governments require a wild animal health program that delivers a more comprehensive program. Some agencies, such as CFIA, AAFC, DFO and PHAC need to be able to track known diseases and contaminants and report on their status in the environment to trading partners and Canadians. Other agencies, such as Parks Canada, Environment Canada and DFO have the mandate to protect Canada's natural heritage, including fish and wildlife and thus, have greater needs to promote and sustain healthy wild animals. Across agencies, there are growing expectations to be able to anticipate emerging or unanticipated threats as well as to ensure resilience against such threats. This Framework for Action outlines a health program that supports Canada's need to document and respond to known problems and bolsters the ability to quickly detect emerging threats while promoting new partnerships and systems to ensure capacity to anticipate problems and act to sustain healthy populations in advance of harm.

Roles and Responsibilities to First Nations, Inuit and Metis Peoples

Canada's First Nations, Inuit and Metis peoples have a higher than average contact with fish and wildlife. As a result they are more likely to detect and feel the impacts of declining fish and wildlife health. Canada's Constitution affirms the aboriginal and treaty rights of First Nations, Metis and Inuit peoples. The right to hunt and fish has long been recognized as included in those constitutionally protected rights. Judicial interpretation of aboriginal rights has also outlined that fiduciary obligations exist where the government has assumed authority over their resources. Litigation has been initiated, both within Canada and by indigenous peoples in other jurisdictions, asserting that aboriginal and treaty rights related to fish and wildlife necessarily include minimum standards of quality. As a result, government investment in wild animal health is needed to support the ability of indigenous peoples to exercise their aboriginal rights, including the protection of fish and wildlife from contaminants and disease. The implementation of a national fish and wildlife health strategy may demonstrate that the fiduciary obligations owed to First Nations, Inuit and Metis peoples arising from the assumption of jurisdiction over fish and wildlife have been met.

The Current Situation

The Canadian Wildlife Health Cooperative (CWHC) was formed in 1992 as a consortium of Canada's veterinary schools. It is an **innovative public management success story and a unique model for science procurement and partnership**. A program based on the CWHC can deliver its services at a fraction of the

cost of similar programs elsewhere because of strategic partnerships achieved through its distributed model. The CWHC delivers a national wild animal health program with no human resource obligations or infrastructure demands on government.

The CWHC had two founding objectives: to supplement regional capacity for wildlife disease diagnostics and to develop a national perspective of the state of wildlife health. The CWHC has grown to serve as Canada's national wildlife health program. Multiple federal agencies depend on the CWHC to generate a reliable assessment of the state of wildlife health to inform trading partners, identify conservation priorities, alert public health to emerging risks and fulfill many of the federal obligations for wildlife health.

The CWHC is a university-based organization. It has expanded from its original four regional centres to include six locations; one at each of Canada's veterinary colleges and one at the British Columbia Animal Health Centre. This organizational model allows delivery of wild animal health services **with significant cost savings**. It has no legislated power but its governance and organizational structure has allowed the CWHC to build bridges across agencies and jurisdictions to better coordinate response to wildlife health events. Fiscal support is derived from federal agencies (40% across 4 ministries), provincial and territorial governments (20%), non-governmental organizations (10%) and support in-kind from host institutions (30%). The partnered approach to funding ensures no single agency bears the financial burden and that investment of any one agency is levered by the capacity, infrastructure and expertise developed through the total investment of all partners. This ensures that each funder receives more services than their investment alone could generate, allowing the CWHC to meet a wide spectrum of federal, provincial and territorial needs.

As expectations of Canadians and trading partners for a robust pan-Canadian wildlife health program have increased along with numerous emerging wild animal health threats, the expectations for a national wild animal health program has grown beyond current capacity. Successful response to endemic and emerging needs over the past 22 years has created a demand for the CWHC services that cannot be sustained with the current funding formula. **Increased reliance on CWHC programs without concurrent budget increases is creating a deficit that will necessitate financial reallocations that will diminish current services and contributions to governments.** Unstable and inconsistent financial capacity in recent years threatens the ability of the CWHC to meet the existing and growing needs and expectations of a national fish and wildlife health program to anticipate emerging needs, ensure nationally representative situational awareness, invest in prevention and preparedness, ensure a harmonized and equitable program across Canada and plan beyond an annual cycle.

A Path Forward

Structure and Governance

AN INDEPENDENT SCIENCE NETWORK

Because of its cross-jurisdictional nature, no single agency can have a monopoly over the delivery of the public service of wild animal health. A nationally networked fish and wildlife health program would have the flexibility to deliver and integrate federal roles that cross Ministries and involve other governments and

private sector service providers.

An independent science network for national fish and wildlife health would:

1. *Provide a clear focal point* for Canada on national wild animal health issues with which to interact with the global community.
2. *Improve and focus communication* by centralizing and sharing experience and information across government agencies and with the public at large. This fosters consistent messaging.
3. *Improve intelligence systems* by focusing information in a single program rather than across Ministries thus allowing information to be integrated, assessed and quickly communicated to decision makers.
4. *Enhance collaboration amongst the various levels of government and stakeholders* given the organization's flexibility in the ways in which it interacts across jurisdictions, responsibilities and disciplines.
5. *Allow greater timeliness and flexibility in responding to emergencies and emerging issues* by acting more rapidly and efficiently than can sometimes be achieved from inside a Ministry working across jurisdictions.
6. *Enable a longer-term planning horizon* not bound to the annual planning cycle of the government, thus allowing planning for health protection in the face of multi-year change, including developing capacity to anticipate risks and communicate vulnerabilities in advance of harms.

Using the existing CWHC infrastructure and relationships as the foundation for this independent science network provides authenticity, trust and recognition for the program (because of its history, autonomy and sound science base); creates significant economic efficiencies for program delivery; and provides the network needed to meet strategic goals. The existing CWHC governance and structure allows government to:

1. *Concentrate and focus federal resources* to enhance the federal government's ability to leverage and coordinate cross-Ministry funding, reduce duplications and increase cross-agency information sharing.

2. *Promote a national network of information and capacity sharing* to leverage investments by other levels of government or additional partners.

3. *Improve performance outcomes* by creating greater uniformity and consistency in fish and wildlife health across Canada, shortening the time from knowledge generation to action, building cross-agency relationships and maximizing geographic representation and harmonization of activities.

GOVERNANCE

The proposed governance structure aims to balance ministerial responsibility and accountability with the autonomy needed to ensure effective coordination and delivery of services across Canada and across interests in fish and wildlife health.

Accountability: The CWHC would be accountable to a federal/provincial/territorial steering committee that represents environmental, public health and economic interests that cross Ministries and jurisdictions. Committee membership would be at the discretion of Ministries represented on the committee. A CWHC

management committee would be responsible for the program's operations, strategic plan and budget, as well as reporting on the programs performance to the respective Ministries/Agencies.
Decision making: The CWHC management team would be responsible for ensuring the program operates within the policy and strategy framework endorsed by the steering committee. The program would play an integral role in providing relevant and reliable data and analyses to policy-makers.

Equity: The CWHC would serve the interests of all Canadians and its wild animals by implementing and governing the programs in a manner that is nationally representative. Financing of core operations to meet strategic goals would be secured through annual membership contributions from Ministries requiring wild animal health services, but the program delivery would be at the discretion of the CWHC management committee, irrespective of political interests.

Participation: Anyone affected by or interested in a fish or wildlife health decision should have the opportunity to participate in the process for making that decision. The national wild animal health network would be transparent and inclusive with explicit rule for information sharing and quality control.

Strategic Goals and Actions for a National Wild Animal Health Plan

MISSION

To ensure strong, consistent leadership to protect fish and wildlife health and the values they bring to Canadians by promoting, sustaining, coordinating and integrating infrastructure and expertise in Canada.

STRATEGIC GOALS

1. Strengthen Canada's capacity to identify and reduce wild animal health factors that put conservation, public health or cultural opportunities at risk, and to reduce the economic impacts of fish and wildlife diseases in Canada
2. Develop, implement and assess programs and policies whose specific objective is to sustain healthy wild animals and the positive contributions they make to Canada by reducing disparities and differences in fish and wildlife health capacity across the country
3. Encourage population health strategies that improve anticipation of fish and wildlife health policy and practice needs in the face of rapidly changing social and environmental conditions
4. Improve efficiency and effectiveness of public services by working together

DESIRED OPERATIONAL OUTCOMES

1. Ensure equitable and equivalent capacity and approach across all of Canada
2. Ease of cross-jurisdiction planning, budgeting and coordinating of activities
3. Sustained and predictable capacity to allow planning and preparedness

KEY AREAS OF FOCUS

The National Fish and Wildlife Health Action Plan strives to cultivate and sustain multi-jurisdiction relationships, partnerships, expertise and capacity to ensure Canadians and international partners have confidence in declarations on the state of wildlife health in Canada and can be assured that actions are taken to protect fish and wildlife health and the values they bring Canada by focussing its efforts on: ***Health Intelligence, Stewardship, Innovation and Governance***

HEALTH INTELLIGENCE

Linking information to document the fish and wildlife health situation in Canada including signals of emerging risks and changes in vulnerability

Health intelligence is the process of generating, collection and analyzing a variety of information to foster collaboration and consultation through innovation in surveillance, information exchange, research and response to protect, promote and support decisions affecting wild animal health and their associated social values.

Action 1: Partner to support regional centres of expertise to ensure equitable access to diagnostic and investigative capacity to track trends in death and disease in fish and wildlife and assess their significance for conservation, public health and economic activities

- Support harmonized capacity and approaches to fish and wildlife health surveillance across jurisdictions
- Build from pre-existing CWHC partners and infrastructure to sustain cooperative agreements that maximize economic efficiency in program delivery

Action 2: Support centralized analytical capacity to assess, interpret and communicate surveillance outputs.

- Enable a sustainable national information management system in the CWHC that is sufficiently resourced to adapt capacity and methods to meet evolving healthy intelligence needs and provide an electronic archive to document fish and wildlife health status.
- Ensure adequate human resources for rapid assessment and communication of analyses and assessments of wild animal health information.
- Support relationships and information sharing on the determinants and drivers of wildlife health in order to identify circumstances that increase wild animal vulnerability in advance of harms

STEWARDSHIP

Acting as a central agent to identify, provide independent expert advice and help achieve policy goals that address shared values linked to wild animal health

Wild animal health stewardship is achieved by synthesizing and sharing evidence for timely and effective planning and management of resources to protect and sustain healthy wild animal populations.

Action 3: Create a national secretariat within the CWHC for centralized administrative and analytical functions needed to assemble a national perspective of the state of fish and wildlife health and communication capacity to ensure timely sharing of policy-relevant knowledge arising from the national perspective

- Ensure adequate human resources and communications capacity to generate regular State of Fish and Wildlife Health reports that identify emerging policy needs
- Work with federal, provincial, territorial, aboriginal governments to strengthen and regularize information exchange to improve situational awareness and increase efficiency of program delivery by creating mechanisms for cross-agency awareness of agency knowledge, needs and capacities in wild animal health.

INNOVATION

Ensuring Canada maintains its ability to protect wild animal health and society in a rapidly changing world

Innovation in fish and wildlife health supports research, development and knowledge transfer leading to innovative public policy to forecast means to prevent adverse effects on wild animal health and sustain fish and wildlife health.

Action 4: Formalize and support agreements with academic and other partners that form CWHC regional and national centres

- Ensure integration of activities with academic partners with access to infrastructure and support for research and development that is linked to and enabled by their participation as a regional centre
- Encourage and enable interchange between academic and government personnel affiliated or working with the national wild animal health program

GOVERNANCE

Translating policy goals and social expectations into program performance

Good governance in wild animal health promotes openness, transparency and integrity; facilitates effective collaboration; and promotes a performance orientation in program delivery

Action 5: Assemble a federal/provincial/territorial/aboriginal government steering committee to provide strategic direction and oversight to the national fish and wildlife health program
Action 6: Develop and fund 5-year strategic plans and goals for national fish and wild animal health activities

Outcomes

Assurance

A harmonized and equivalent wild animal health program across Canada provides public confidence that ensures fair and secure marketplace access and public use of natural resources, collectively worth billions of dollars to the Canadian economy.

A trained, accessible and quickly mobilizable workforce with an established health infrastructure distributed across Canada that ensures rapid and consistent responses to urgent issues.

Safety

A consistent and adequate flow of diagnostic samples supports cross-Canada surveillance that; (i) is nationally representative; (ii) identifies needs to adapt management of endemic problems (iii) provides early waning of emerging threats; (iv) detects infectious, non-infectious or environmental threats and (v) supports a national sentinel system to monitor environmental safety.

Equivalence

National capacity for investigation and assessment allows for consistent identification, triage and prioritization of threats across Canada– helping government in social marketing, risk prioritization and evidence-based risk management across public health, conservation, agriculture, natural resource management and other economic and social activities.

Efficiency

A program based on the CWHC model ensures no single agency bears the full burden of program support and that investment of any one agency is leveraged by the capacity, infrastructure and expertise secured through the total investment of all partners
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.

Transparent, Accountable and Responsive Programs.

An independent science network is uniquely suited to address wildlife issues that cross departmental mandates and capacity 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.

Annex 1: Details on the Value of Wildlife to Canada

The following information outlines some key economic contributions of wildlife in Canada. It is provided to help reconcile the size of investment in wild animal health with their economic and other value to Canada. A complete, up-to-date economic assessment of the value of wildlife to Canada is not available.

Economic importance

The 2012 Canadian Nature Survey[7] estimated that nature related activities generated $41.3 billion annually. This is a significant increase from the $11 billion estimated for nature-related activity spending in 1996,[8] showing the important growth in this sector. Non-consumptive, recreational use of wild animals exceeds more traditional, yet still important, commercial consumptive uses. Over half of adult Canadians chose where they lived in part to access nature and 89% participate in nature-related activities. Canadians who watch, feed and film birds do so for 133 days/year, more than any other non-consumptive nature activity. Canadians contribute $875 million per year to nature and conservation groups. Parks Canada contributes $3.3 billion annually to the Canadian economy. Much of their visitor experiences revolve around wildlife viewing. Participation in wild animal associated recreation is anticipated to continue to grow.

The 2015 Standing Committee on Environment and Sustainable Development found that hunting, trapping and fishing not only contribute to aboriginal culture and rights and the quality of life of many Canadians, but also generate $14-15 billion annually. Wildlife disease can threaten this economy as was seen in the 2014-15 avian influenza outbreak in Canada when the United States had plans to ban importation of unprocessed poultry, including hunted ducks. Out of province, especially US, hunters are significant contributors to the hunting and fishing economy. For example, $14.3 million is injected annually (2006 data) into the Saskatchewan economy from hunting related expenditures by non-Saskatchewan residents.

Fisheries and Oceans Canada (DFO) estimated the value of the seafood sector (excluding aquaculture) to be near $15 billion in 2012. DFO determined that 3.3 million people took part in the recreational fishery in 2010, spending $2.5 billion directly and an additional $5.8 billion for gear and equipment to support their leisure activity.

Wilderness tourism is a key contributor to many provinces' economies. Viewing wildlife is the second most common activity for Canadian pleasure travelers[9]. Direct tourist expenditures on ecotourism is approximately $1.5 billion dollars in British Columbia alone. This figure does not include the billions of dollars in tourism supply services (hotels, restaurants, transportation, etc) that the sector supports.
A recent study estimated the current harvesting economy is worth approximately $40 million (in Nunavik alone) annually.

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7 Available at **http://biodivcanada.ca/default.asp?lang=En&n=2A0569A9-1**

8 The Importance of Nature to Canadians: The Economic Significance of Nature–Related Activities. Environment Canada. Available at: **http://publications.gc.ca/collections/Collection/En47-312-2000E.pdf**

9 Birding demographics and economics. **http://www.birdcanada.com/birding-resources/birding-demographics-economics/**

The Nunavut turbot fishery provides an important and growing contribution to the territory's economy, generating $70 million in 2011[10]. A 1990 study estimated that the food replacement value for wildlife hunting for 6500 Omushkego Cree living in the Hudson and James Bay Lowland was $7.8 million for one year[11].

All of these economic benefits require Canadians to have confidence that wild animals are healthy and safe.

Ecological Services

Ecological services are the benefits people obtain from ecosystems. For wild animals these include provisioning services (such as being sources of food); regulating services (such as pest and disease control); cultural services (such as spiritual, recreational, and cultural benefits); and supporting services such as nutrient cycling that maintain the conditions for life on Earth.

The value of bats to North American agriculture, for example, has been estimated to be $12 to $173/acre of cropland[12] through reduction in pesticide use. Using Statistics Canada's 2006 estimates of 86 million acres of field crops in Canada, bats save the Canadian agricultural economy billions of dollars. This does not take into account the 'downstream' costs of pesticide use such as pesticide resistance, unanticipated toxic effects or occupational safety risks due to pesticide use, or benefits to other sectors such as forestry. The costs to Canada of the real and the potential impacts of forest pests are in the order of hundreds of millions of dollars. For example, a 2009 report prepared for the Canadian Council of Forest Ministers concluded that Canada could have avoided a cost of $165 million annually by preventing the introduction and establishment of four high-profile invasive forest insects and diseases[13]. These pest control benefits have been severely impacted by a new epidemic disease of bats (white-nose syndrome) that has driven 3 species onto the federal endangered species list in less than 8 years. Birds also play a critical role in reducing insect pests. "These services have been valued at as much as $5,000 per year per square mile of forest, potentially translating into literally billions of dollars in environmental services"[14].

Healthy wildlife communities help to keep diseases that affect people and domestic animals under control. Even cryptic species like salamanders play a role in carbon cycling and therefore climate change adaptation.

Sources of Harm

Most recently-emerged human infections had their origin as wildlife diseases. While these infections from wildlife may not be responsible for a large burden of illness (apart from HIV/AIDS), their large economic consequences have been experienced by many areas of industry including trade, travel, tourism, agriculture, and health care. Concerns over pandemics, such as SARS and avian influenza have driven much of the

interest in enhancing wildlife surveillance. The forecasts for economic impacts of pandemics fall into 3

10 Government of Nunavut. **http://www.gov.nu.ca/eia/documents/nunavut-economy**

11 Berkes et al. 1994. Wildlife harvesting and sustainable regional native economy in Hudson and James Bay lowland, Ontario. Arctic 47(4)

12 Boyles, Justin G., et al. "Economic importance of bats in agriculture." Science 332.6025 (2011): 41-42.

13 **http://www.nrcan.gc.ca/forests/fire-insects-disturbances/pest-management/13387**

14 **http://www.stateofthebirds.org/2009/home-page-documents/the-value-of-birds**

basic types: (1) direct costs from mortality and health care costs; (2) indirect costs due to lost productivity, reduced trade, and fear leading to lack of investment secondary to human disease and/or (3) impacts on trade and business. Response to avian influenza of waterfowl origin in 2014-15, for example, directly cost North America tens of millions of dollars in control activities alone. Global forecasts for avian influenza pandemics have ranged from benign to catastrophic. The TD Bank estimated the net cost of the SARS outbreak to the Canadian economy at between $1.5 billion and $2.1 billion. Adapting data taken from BC Centre for Disease Control and Public Health Agency of Canada and using data from Maes et al (1998), a crude direct cost estimate for Lyme disease in BC and Ontario alone would be $2.7-4.0 million per year. White-nose syndrome in bats drove important species onto the endangered species list in less than a decade. Direct response costs for this disease is in the hundreds of thousands of dollars per year but they pale in comparison to the lost ecological integrity and services bats provide to us.

Annex 2: Economic Advantages of the Current Delivery Model

Synergies between funding sources allow expectations to be met

Annual contributions from federal, provincial/territorial and civil society partners and in-kind support from CWHC regional host institutions ensures no single agency bears the full burden of CWHC support and that investment of any one agency is leveraged by the capacity, infrastructure and expertise secured through the total investment of all partners. 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.

Replacement costs would be prohibitive

Replacement of the infrastructure needed to meet international obligations would undoubtedly exceed $15 million for one diagnostic centre which could not provide timely regional representation. Millions of dollars have been invested in developing the CWHC National Wildlife Health Database (which is used for OIE reporting) with maintenance costs of $200,000 per year. At a minimum, the cost to any single government agency of operating the existing program on its own would be > $3M, the current operating annual cost. Costs of providing infrastructure for knowledge synthesis without investigation, coordination, facilitation or diagnostic functions could be estimated by looking at the annual budget of a National Collaborating Centre in Public Health which currently sits at $900,000 per year per centre.

The networked and distributed model allows for significant cost savings

In-kind support reduces the need to create or maintain infrastructure that could cost millions to develop and hundreds of thousands of dollars per year to maintain. Academic partners secure independent grants for research that provides the evidence base for CWHC core activities, further leveraging partner investment.

Federal contributions to the core functions are more than doubled

In-kind contributions and capacity developed through special projects funding or funding for response to urgent issues doubles the CWHC capacity to meet Canada's needs.