

Canadian Cooperative Wildlife Health Centre

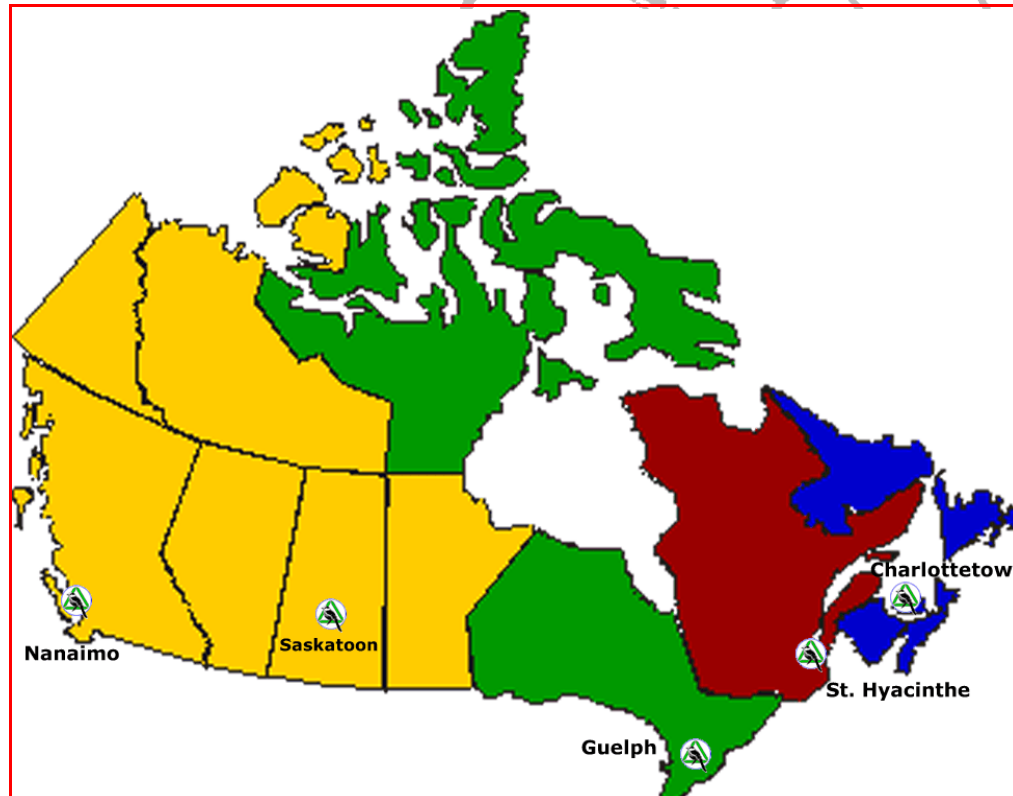
**Annual Report
for 2003-2004**



About the CCWHC

The CCWHC is a university-based, inter-agency partnership through which Canada's four Colleges of Veterinary Medicine, government agencies at all levels and non-government agencies pool their resources and expertise to reduce the economic and ecological costs and impacts of wild animal diseases in Canada.

- The CCWHC partnership was established in 1992 with leadership from Environment Canada and the Canadian Wildlife Directors, and with a start-up grant from the Max Bell Foundation.



- In 2003-04, the CCWHC partnership included all provincial and territorial governments; four federal agencies: Environment Canada, Health Canada, Parks Canada Agency, Canadian Food Inspection Agency; Ducks Unlimited Canada, Canadian Wildlife Federation and Syngenta Crop Protection.

- The CCWHC has four primary university locations, each serving a large region of Canada:

Charlottetown PEI
St-Hyacinthe QC
Guelph ON
Saskatoon SK

West coast activities occur through a partnership with the Centre for Coastal Health in Nanaimo BC.

What We Do

The CCWHC has four separate business lines, each carried out on regional and national scales. The first three business lines are supported by annual contributions from CCWHC partner agencies and the universities. The fourth business line – Wildlife Disease Response and Management – is supported by separate funding arrangements for each project and program.

The Four Business Lines of the CCWHC			
<p>① Wildlife Disease Surveillance: The constant detection, diagnosis and recording of wild animal diseases in Canada, where each has occurred and in which wild animal species, and identification of potential major disease issues for further attention.</p>	<p>② Information Services: Scientific advice and information to partner agencies in support of their management decisions and the delivery of their programs.</p>	<p>③ Education: Educational programs and services to partner agency personnel, and education of wildlife health specialists by participation in university programs.</p>	<p>④ Wildlife Disease Response and Management: Targeted special programs are implemented when urgent or important new disease issues require further assessment, response or management.</p>

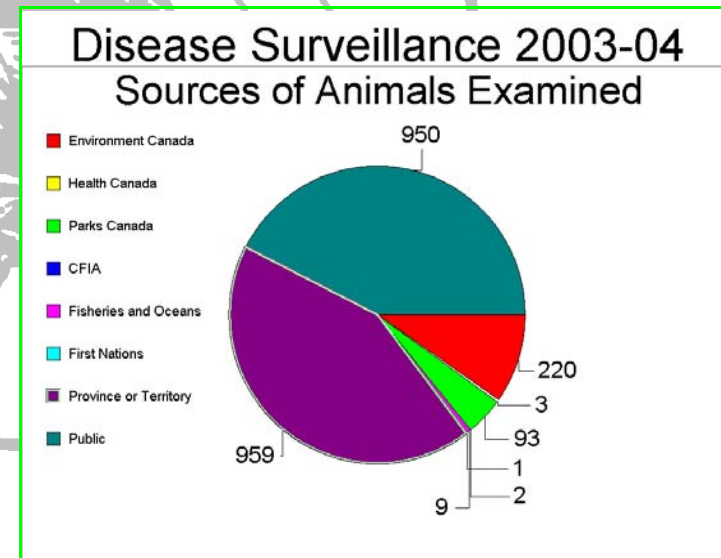
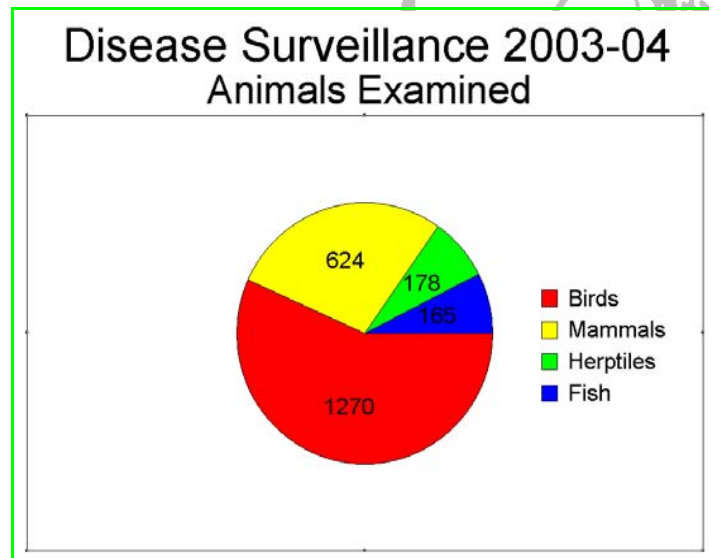


① Wildlife Disease Surveillance

● Disease surveillance is the foundation for all aspects of wildlife disease response and management. It includes the detection and identification of diseases and their causes, central recording of information in a national database, information analysis, and communication of findings to managers and other stakeholders.

● Disease surveillance is achieved by medical examination of wild animal specimens discovered by wildlife field personnel and sent to the CCWHC and its collaborating laboratories.

In 2003, the CCWHC Program Examined 2,237 Wild Animal Specimens



① Wildlife Disease Surveillance - Highlights from 2003

Chronic Wasting Disease



22 New Cases were detected in Saskatchewan in the 2003-04 hunting season. This is a remarkable increase over the total of 11 cases detected previously in the wild in Canada, and brings the total to 33. The disease now appears to be established in some Canadian wild deer populations.

Type E Avian Botulism on the Great Lakes



In addition to killing large numbers of Common Loons and mergansers, this new epidemic may threaten Greater Black-backed Gulls in Ontario.

Cancer in Beluga of the St Lawrence Estuary



Eight Beluga were examined in 2003. Two had died with cancer. This high rate of cancer is remarkable in wild animals, but is a consistent finding in this population.

Hatch Failures in Piping Plover



Medical examination of eggs that fail to hatch is contributing to the recovery plan for this species at risk.

Community-Based Health Monitoring



A new program now is training local wildlife health monitors in communities in the Northwest Territories.

New Parasite Discovered

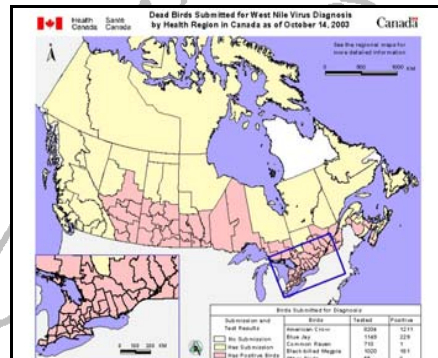


A new parasite of northern Caribou & Muskoxen was discovered through use of advanced molecular technology.

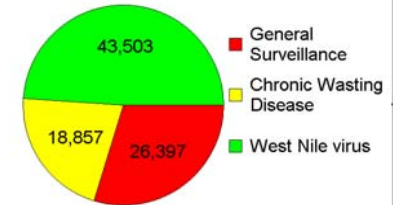
CCWHC Information Technology Centre

- The CCWHC Information Technology Centre links together and supports the entire CCWHC program.
- The Centre maintains Canada's National Wildlife Disease Database.
- Internet-accessible data input and reporting ensure remote access by all CCWHC partners.
- The IT Centre began data management for the wildlife disease surveillance programs of Mexico and Costa Rica in 2003-04.

- ◆ **Data Mapping with Health Canada** →
- ◆ **Information Returned to the public participating in Disease Surveillance** →
- ◆ **Informational Website** ↓



Wildlife Disease Database 88,757 Animal Records



Technology

- 3 Server Computers
- MySQL & PostGreSQL on Linux
- 1.25 Terabyte Storage Capacity

Description	Information
CWD Sample ID: Header	06706
Species	White-tailed Deer
Date Shat	2003-10-02
Date Arrived CWD	2003-10-02
Date Arrived CWD/BC	2003-10-14
Date Brain Sampled	Not Available
Date Submitted for Testing	2003-10-21
Date Results Finalized	2003-10-28
Wildlife Management Zone	033
Location Animal Shot	No legal land location information Nearest town: CHRISTOPHER LAKE; 12 kms NE No GPS or UTM coordinates
CWD Status	Negative

New Equipment provided by Health Canada

- IBM Rack-Mounted Server
- Apple xServe RAID Backup

Value: \$33,000



② Information Services

The CCWHC responded to a wide range of requests for information and advice from partner agencies in 2003-04. These included participation in regional, national and international meetings, participation on committees, and reports on specific issues. The CCWHC also provided information to the public by responding directly to inquiries, maintaining an informational website, publishing a semi-annual Newsletter, and providing numerous media interviews.

Regional

- Health Risk Assessment for Introduction of Eastern Wild Turkeys to Nova Scotia
- West Nile Virus - Reports to regional meetings
- Ontario Rabies Advisory Committee
- OMNR Guidelines for Handling Wildlife in Captivity
- OMNR Guidelines for Handling Wildlife Found Dead
- Expert Witness for Crown - wildlife-related litigation
- Publication: *Field Guide to Diseases and Parasites of Marine Mammals of the Eastern Canadian Arctic*
- Scientific Advisory Committee to The Task Force Group for Bovine Tuberculosis in Manitoba
- Sturgeon River Plains Bison Management Strategy Development Team
- Development of standard operating procedures for wildlife capture and handling
- Ministerial consultation on feeding and baiting of wildlife
- Nova Scotia Mainland Moose Recovery Team

National

- Canada's National Wildlife Health Strategy - Primary drafting and revision
- Health Canada Working Group on Climate Change

- National Steering Committee on West Nile Virus
- National Aquatic Animal Health Program Planning Workshop
- Interprovincial Chronic Wasting Disease Working Group
- Drug advice, acquisition and distribution to wildlife agency personnel
- Health Canada Zoonoses and Special Pathogens Laboratory Peer Review
- Consultations with Veterinary Drugs Directorate on wildlife issues
- Scientific advice and material for CBC *The Nature of Things*
- Canadian Animal Health Consultative Committee
- Canadian Animal Health Network
- CCAC Subcommittee on Guidelines for Care and Maintenance of Marine Mammals in Captivity
- Animal Determinants of Emerging Diseases Group, Michael Smith Foundation for Health Research

International

- OIE Working Group on Wildlife Diseases
- Type E Botulism On the Great Lakes
- Wildlife Disease Association - Host for Annual Conference
- Costa Rica - Wildlife Disease Surveillance Database
- Mexico - Wildlife Disease Surveillance Database

③ Education

Education is a key activity of the CCWHC. Education supports disease surveillance through instruction and engagement of wildlife field personnel, and creates wildlife health specialists through university programs. Instruction in a wide range of topics related to wild animal health and disease were provided to partner agency personnel in 2003-04 and the CCWHC was a major provider of the CAZVW course in chemical immobilization, capture and handling of wildlife. The CCWHC also provided instruction in wildlife health and disease to university undergraduate students, and supervised and taught graduate students pursuing higher degrees.

Dr. Emily Jenkins, a veterinarian and PhD student at the Western College of Veterinary Medicine who is studying parasites of Dall's Sheep in the NWT and effects of climate change, was the 2003 winner of the ARCUS Award for Arctic Research Excellence, presented in Washington DC.

Education Summary 2003-04	
Hours of Instruction to Partner Agencies	173
Graduate Students Supervised	21
University Courses Taught	7
Scientific Presentations	35



Dr. Jenkins at work in the MacKenzie Mountains



CCWHC Course for wildlife personnel, February 2004

④ Wildlife Disease Response and Management

The CCWHC responds to important wildlife disease issues with targeted programs of enhanced surveillance, research and participation in the disease management actions of partner agencies. CCWHC personnel also participate in research that extends knowledge of wildlife health and welfare in Canada. Each of these targeted programs is financed separately from the core CCWHC program.

Disease Response and Management in 2003-04

- | | |
|--|--|
| <ul style="list-style-type: none"> ● National West Nile virus Surveillance Program in Wild Birds ● Chronic Wasting Disease Surveillance in Saskatchewan ● Chronic Wasting Disease Surveillance in Manitoba ● Low-power Ammunition for the Humane Killing of Young Harp Seals ● Health Status of Beluga Whales of the St. Lawrence Estuary ● Tuberculosis, Elk and Wolves in Riding Mountain National Park ● Impacts of Climate Change on the Spread of Lyme Disease ● Bears, Measures of Long-term Stress and Ecosystem Health ● Development of PCR Tests for Wildlife Pathogens ● A Laboratory Model for Type E Botulinus Intoxication of Fish ● <i>Bartonella</i> sp in Prairie Rodent Communities ● Parasitic Pneumonia in Beluga Whales ● Implantation of Radio Transmitters in Long-tailed Ducks ● Avian Botulism: Distribution of Spores in Wetland Environments | <ul style="list-style-type: none"> ● Revision of CAZWV Chemical Immobilization Course Manual ● Viral Infections in Ring-billed Gulls ● Urban Raccoon Management ● Tail-mounted Radio Transmitters for Beaver ● Health Assessment of Amphibians in Agricultural Ecosystems ● Exposure Level for Pesticides in Birds of Prey ● Abomasal Nematodes of Muskoxen - Life History and Effects ● Epidemic Diseases in Cormorants ● Helminth Parasites in Black Bears in the Deh Cho, NWT ● Seasonal Patterns of Gastrointestinal Nematodes of Dall's Sheep ● Treatment of <i>Umingmakstrongylus pallikuukensis</i> in Muskox ● Southern Hudson Bay Polar Bear Research Project ● Evaluation of Injury from High Velocity Remote Drug Delivery Systems |
|--|--|

Major Supporting Agencies

Health Canada	Governments of:
Provincial Health Departments	Saskatchewan
Parks Canada	Northwest Territories
Environment Canada	Nunavut
Fisheries and Oceans Canada	Ducks Unlimited Canada

Total Financial Resources:

\$1,476,088

Publications and Reports

A Sample of Publications in Scientific Journals

- Lindsay, L.R., I. Barker, G. Nayar, M. A. Drebot, S. Calvin, C. Scammell, C. Sachvie, T. Scammell-La Fleur & H. Artsob. 2003. Evaluation of an antigen capture assay to detect West Nile virus in dead corvids. *Emerging Infectious Diseases* 9: 1406-1410.
- Ølberg R-A, I.K. Barker, G.J. Crawshaw, M.F. Bertelsen, M.A. Drebot and M. Andonova. 2004. West Nile virus encephalitis in a barbary macaque (*Macaca sylvanus*). *Emerging Infectious Diseases* 10: 712-714.
- Whiteside, D.P., I.K. Barker, K.G. Mehren, R.M. Jacobs, and P.D. Conlon. 2004. Clinical evaluation of the oral iron chelator deferiprone for the potential treatment of iron overload in bird species. *Journal of Zoo and Wildlife Medicine*, In press.
- Bertelsen, M.F., R.-A. Ølberg, G.J. Crawshaw, A. Dibernardo, L.R. Lindsay, M. Drebot, and I.K. Barker. West Nile virus infection in the eastern loggerhead shrike (*Lanius ludovicianus migrans*); pathology, epidemiology and immunization. *Journal of Wildlife Diseases*, in press.
- Lair, S., K. G. Mehren, E. S. Williams, and I. K. Barker. Renal Tubular Neoplasms in Black-footed Ferrets (*Mustela nigripes*) - 38 cases. *Veterinary Pathology*, In press.
- Ogden, N.H., L.R. Lindsay, G. Beauchamp., D. Charron, A. Maarouf, C.J. O'Callaghan, D. Waltner-Toewes, and I.K. Barker. Investigation of the relationships between temperature and development rates of the tick *Ixodes scapularis* (Acari: Ixodidae) in the laboratory and field. *Journal of Medical Entomology*, In press.

Kutz, S.J., E. Garde, A. Veitch, J. Nagy, F. Ghandi and L. Polley. 2004. The muskox lungworm, *Umingmakstrongylus pallikuukensis* does not establish in experimentally exposed thinhorn sheep (*Ovis dalli*). *Journal of Wildlife Diseases*. In press.

Kutz, S. J., E. P. Hoberg, J. Nagy, and L. Polley. 2004. 'Emerging' parasitic infections in arctic ungulates. *Integrative and Comparative Biology* In press.

Hoberg E. P., S. J. Kutz, K. Galbreath, and J. Cook . 2003. Arctic biodiversity: from discovery to faunal baselines- revealing the history of a dynamic ecosystem. *Journal of Parasitology* 89: S84-S95.

Dobson, A., S. Kutz, M. Pascual, and R. Winfree. 2003. Pathogens and Parasites in a Changing Climate. *In* L. Hannah and T. Lovejoy, Eds., *Climate Change and Biodiversity: Synergistic Impacts*. *Advances in Applied Biodiversity Science* 4. Washington, DC: Center for Applied Biodiversity Science, Conservation International. pp 33-38.

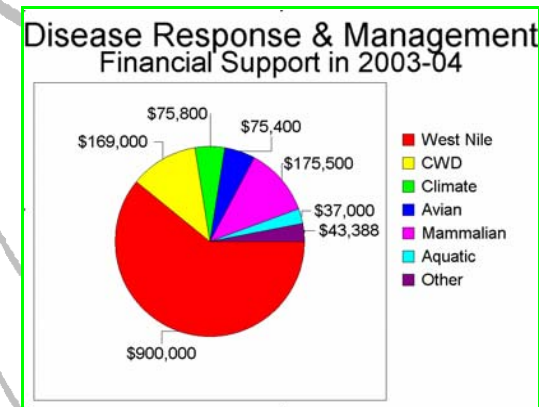
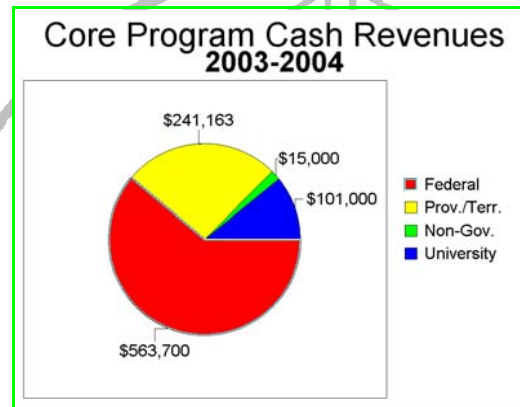
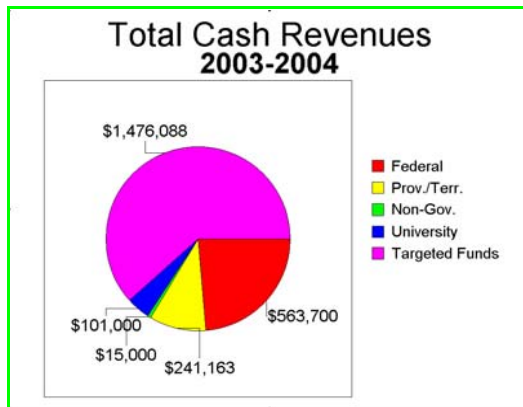
Other Publications

CCWHC Newsletter - 2 issues

Neimanis A. And Leighton, F.A. 2004. Health Risk Assessment for the Introduction of Eastern Wild Turkeys into Nova Scotia. Report to Nova Scotia DNR. 62 pp.

Vlastman, K. And Campbell, G, Douglas. 2003. A Field Guide to Diseases of Marine Mammals of the Eastern Canadian Arctic

Financial Report for 2003-2004 - Revenues



Cash Revenue in 2003-04

Environment Canada	\$300,000	Northwest Territories	\$10,000
Health Canada	\$150,000	Nova Scotia	\$3,000
Veterinary Colleges	\$101,000	Nunavut	\$15,000
Parks Canada	\$78,700	Ontario	\$80,500
CFIA	\$25,000	Prince Edward Island	\$5,261
Alberta	\$7,000	Quebec	\$25,000
British Columbia	\$30,000	Saskatchewan	\$34,523
Manitoba	\$10,000	Yukon	\$7,879
New Brunswick	\$3,000	Ducks Unlimited	\$12,000
Newfoundland and Labrador	\$10,000	Syngenta	\$3,000
		Total	\$910,863

Cash Revenues in 2003-04

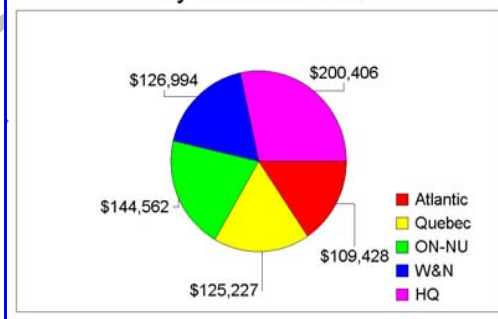
Core Program:	\$ 910,863
Response & Management Targeted Programs:	\$1,476,088
Total	\$2,386,951

Financial Report for 2003-2004 - Expenses

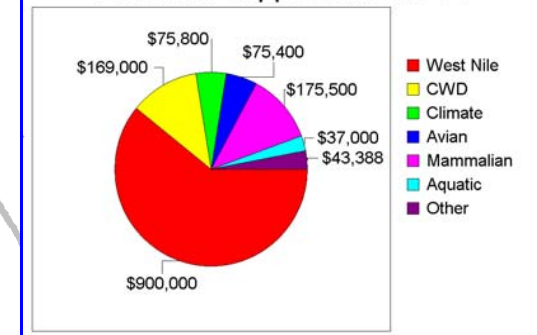
Core Program Expenses 2003 04
By Expense Category



Core Program Expenses 2003 04
By CCWHC Unit



Disease Response & Management
Financial Support in 2003-04



Expense Category	Atlantic	Quebec	Ontario & Nunavut	Western & Northern	Headquarters Office	Totals
Salaries & Benefits	\$87,549.00	\$124,597.59	\$106,758.29	\$163,847.00	\$230,106.00	\$712,857.88
Equipment	\$2,479.00	\$4,845.79	\$0.00	\$4,209.00	\$5,003.00	\$16,536.79
Diagnostic Costs	\$14,756.00	\$13,146.60	\$28,107.36	\$30,864.00	\$0.00	\$86,873.96
Operations	\$1,987.00	\$15,270.24	\$4,473.88	\$20,278.00	\$14,459.00	\$56,468.12
Travel	\$2,657.00	\$6,994.96	\$5,222.55	\$2,458.00	\$9,370.00	\$26,702.51
Other	\$0.00	\$0.00	\$0.00	\$0.00	\$32,093.00	\$32,093.00
Overhead (15%)	\$16,414.20	\$24,728.28	\$21,684.31	\$33,248.40	\$19,007.25	\$115,082.44
Costs Recovered	\$0.00	(\$39,628.06)	\$0.00	(\$94,662.00)	(\$90,625.00)	(\$224,915.06)
Total Expenses						
Before Cost Recovery:	\$125,842.20	\$189,583.45	\$166,246.39	\$254,904.40	\$310,038.25	\$1,046,614.70
With Cost Recovery:	\$125,842.20	\$149,955.39	\$166,246.39	\$160,242.40	\$219,413.25	\$821,699.64

Staff and Associates of the Canadian Cooperative Wildlife Health Centre 2003-04

Core Program Personnel	Atlantic Region	Quebec Region	Ontario & Nunavut Region	Western & Northern Region	Headquarters Office
Director	Pierre-Yves Daoust	Stéphane Lair	Ian K. Barker	Trent Bollinger*	Ted Leighton*
Professional	Scott McBurney*	André D. Dallaire*	Doug Campbell*	Greg Appleyard Susan Kutz Gary Wobeser	Marc Cattet* Ron Templeman*
Technical	Darlene Jones*	Kathleen Brown*	Karlee Thomas*	Marnie Paskaruk*	Amy Templeman*
Clerical			Carol-Lee Ernst*		Jacqui Brown*
CCWHC Associates	Gary Conboy Maria Forzan David Gorman	Christian Bédard Denise Bélanger Guy Fitzgerald Daniel Martineau Roger Ruppanner Carl F. Uhland	Bruce Hunter John Lumsden Dale Smith	Nigel Caulkett Jan Diederichs Helene Philibert Lydden Polley Judith Smits Mark Wickstrom	Craig Stephen

* Salary paid from CCWHC core program budget

Board of Directors of the Canadian Cooperative Wildlife Health Centre in 2003-04

(* Members of the Executive Committee of the Board of Directors)

Michel Damphousse	Directeur du développement de la faune, Société de la Faune et des Parcs du Québec
Jack Dubois	Wildlife Director, Wildlife & Ecosystem Protection Branch, Manitoba Conservation
Brian Evans	Executive Director, Animal Products Division, Canadian Food Inspection Agency
George Finney *	Director, CWS Atlantic Region, Environment Canada
Jim Hancock	Director, Inland Fish and Wildlife Division, Newfoundland and Labrador
Kent Jingfors	Director, Fish and Wildlife Branch, Yukon Department of Environment
Cameron Mack *	Director, Wildlife Policy Branch, Ontario Ministry of Natural Resources
Colin Maxwell	Executive Vice President, Canadian Wildlife Federation
Bruce Morgan	Director, Biodiversity Branch, BC Ministry of Water, Land and Air Protection
Henry Murkin	Chief Biologist, Ducks Unlimited (Canada)
Frank Plummer	Director General, Centre for Infectious Disease Prevention and Control, Health Canada
Charles Rhodes *	Dean, Western College of Veterinary Medicine, University of Saskatchewan
Barry Sabeau	Director, Wildlife Division, Nova Scotia Department of Natural Resources
Dennis Sherratt	Director, Wildlife Branch, Saskatchewan Environment
Jim Skrenek	Director, Fish & Wildlife, Alberta Sustainable Resource Development
Art Smith	Director, Fish and Wildlife Division, PEI Department of Environment
Doug Stewart *	Director, Wildlife Management Division, NWT Department of Resources, Wildlife and Economic Development
Mike Sullivan	Director, Fish and Wildlife Branch, Department of Natural Resources and Energy
Trevor Swerdfager (Chair) *	Director General, Canadian Wildlife Service, Environment Canada
Joe Tigullaraq	Director, Wildlife Services, Nunavut Department of Sustainable Development
Mike Wong	Executive Director, Ecological Integrity Branch, Parks Canada