

COUNTERING BIODIVERSITY LOSS DUE TO DISEASE

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DISEASE IS DRIVING EXTINCTIONS

- ▶ Chytridiomycosis in amphibians, white nose syndrome in bats, facial tumors in Tasmanian devils
- ▶ COVID-19 WHO dashboard
 - ▶ 7,049,376 deaths worldwide since Jan 2020
- ▶ Highly Pathogenic Avian Influenza WOAH dashboard
 - ▶ 600+ million poultry died or culled 2005-2023
 - ▶ Wild birds estimates – lacking data but many millions
 - ▶ Huge potential for negative impacts on Antarctic
 - ▶ Increased incidence in unusual species (+ mammals)
 - ▶ Population and even *species*-level impact



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THE WILDLIFE HEALTH TEAM

- ▶ Clerk & Supervisor
- ▶ Wildlife Care Keepers
- ▶ Lead Keepers
- ▶ Nutrition Science staff
- ▶ Veterinarians
- ▶ Veterinary Technicians
- ▶ Reproductive Science staff
- ▶ Welfare Science staff
- ▶ Species Recovery staff



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UNDER DIRECT HUMAN CARE

Sadiki and Charlie



1984



2011



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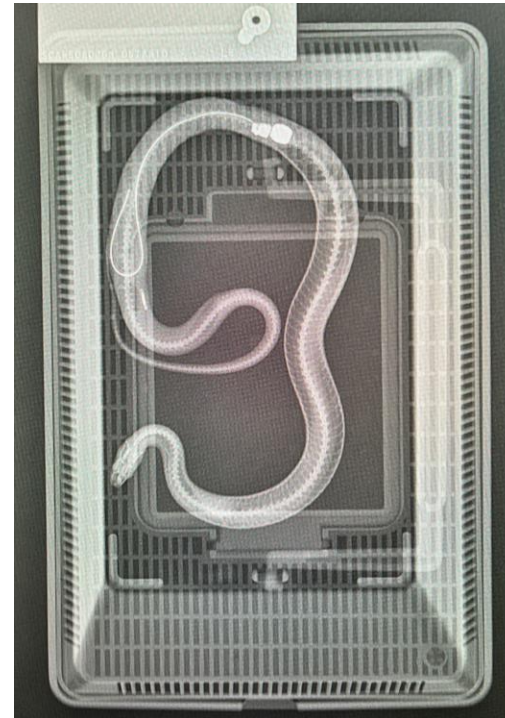


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EASTERN MASSASAUGA RATTLESNAKES



- ▶ Protected status in Canada (Carolinian DU)
- ▶ Conservation program in Ontario since 1980s
- ▶ Disease Risk Analysis for reintroductions
- ▶ Radio-transmitters



Disease Risk Analysis for the
Translocation of Eastern
Massasauga Rattlesnakes
(*Sistrurus catenatus*) in Ontario,
Canada.



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FUTURE PLANS: BEST PRACTICE ZOOLOGICAL MEDICINE



- ▶ Senior Veterinarian
- ▶ Equipment
- ▶ Nutrition and holistic healthcare
- ▶ Preventive Medicine Program
- ▶ Training Programs
- ▶ Conference



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FUTURE PLANS: EDUCATE AND AMAZE OUR GUESTS



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FUTURE PLANS: TWO-EYED SEEING

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Two-Eyed Seeing and other lessons learned within a co-learning journey of bringing together indigenous and mainstream knowledges and ways of knowing

Cheryl Bartlett · Murdena Marshall · Albert Marshall

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Abstract This is a process article for weaving indigenous and mainstream knowledges within science educational curricula and other science arenas, assuming participants include recognized holders of traditional ecological knowledge (we prefer “Indigenous Knowledge” or “Traditional Knowledge”) and others with expertise in mainstream science. It is based on the “Integrative Science” undergraduate program created at Cape Breton University to bring together indigenous and mainstream sciences and ways of knowing, as well as related Integrative Science endeavors in science research, application, and outreach. A brief historical outline for that experiential journey is provided and eight “Lessons Learned” listed. The first, namely “acknowledge that we need each other and must engage in a co-learning journey” is explained as key for the success of weaving efforts. The second, namely “be guided by Two-Eyed Seeing”, is considered the most profound because it is central to the whole of a co-learning journey and the article’s discussion is focussed through it. The eighth lesson, “develop an advisory council of willing, knowledgeable stakeholders”, is considered critical for sustaining success over the long-term given that institutional and community politics profoundly influence the resourcing and recruitment of any academic program and thus can help foster success, or sabotage it. The scope of relevance for Two-Eyed Seeing is broad and its uptake across Canada is sketched; the article also places it in the context of emerging theory for transdisciplinary research. The article concludes with thoughts on why

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“Two-Eyed Seeing” may seem to be desired or resisted as a label in different settings.

Traditional Indian education is an expression of environmental education par excellence. It is an environmental education process that can have a profound meaning for the kind of modern education required to face the challenges of living in the world of the twenty-first century (Cajete (2010), p. 1128, emphasis as in original).

As two-eyed seeing implies, people familiar with both knowledge systems can uniquely combine the two in various ways to meet a challenge or task at hand. In the context of environmental crises alone, a combination of both seems essential (Aikenhead and Michell (2011), p. 114).

Keywords Indigenous knowledge · Traditional knowledge · Two-eyed seeing · Integrative Science · Transdisciplinary · Cross-cultural education

Introduction

Two of the three co-authors of this article are aboriginal elders from the Mi’kmaq Nation. Murdena is the clan mother of the Muin (Bear) Clan, wife to Albert, mother of 6, grandmother of 14, great grandmother of 5, and godmother of 8. She is also a spiritual leader for the Mi’kmaq Nation and a retired Associate Professor of Mi’kmaq Studies at Cape Breton University (CBU) in Sydney, NS, Canada. Albert is from the Moose Clan, husband to Murdena, and (as for Murdena) a father, grandfather, and great grandfather. He is the designated voice on environmental matters for Mi’kmaq Elders in Unama’ki-Cape Breton and the person

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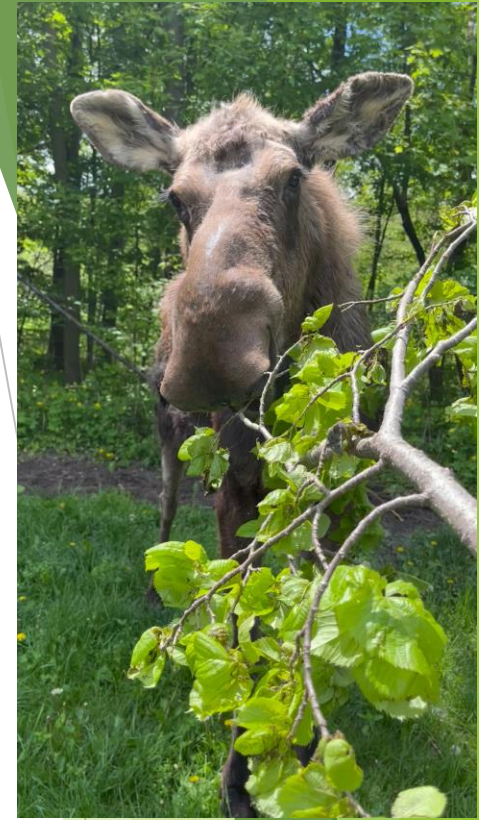


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FUTURE PLANS: BEING SUSTAINABLE



- ▶ Browse
 - ▶ Absolute requirement
 - ▶ Off-site provision complex
 - ▶ Develop on site, on show
- ▶ Wildlife co-existence
 - ▶ Not pest eradication



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FUTURE PLANS: CONSERVATION SCIENCE RESEARCH PORTFOLIO

- ▶ Conservation breeding and disease
- ▶ Genetic technologies
- ▶ Sentinel site
- ▶ Nutrition
- ▶ Capacity building
- ▶ Biobanking
- ▶ One Health
 - ▶ Large-scale grant-funded project

