

Canadian Cooperative Wildlife Health Centre
Centre Canadien Coopératif de la santé de la faune

Training Workshop for OIE Focal Points for Wildlife

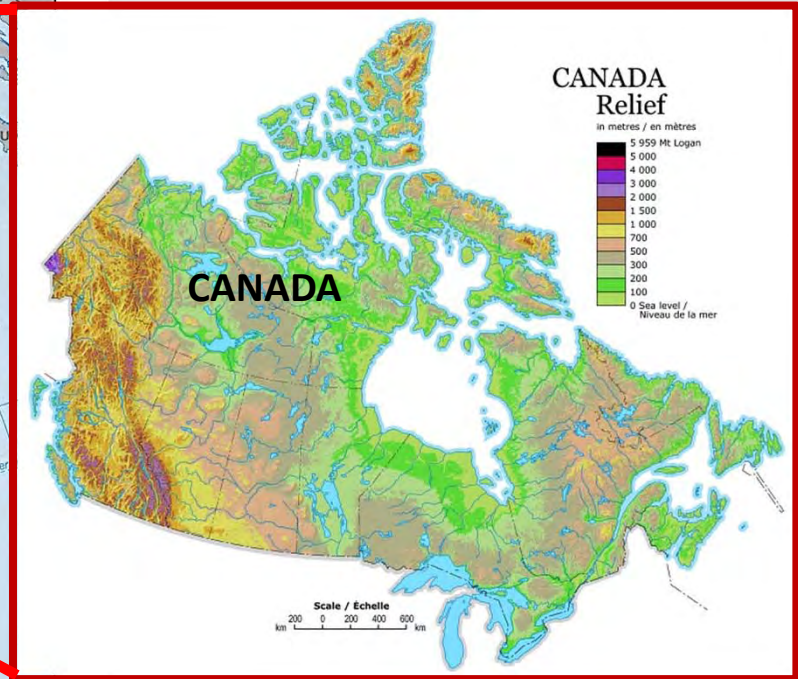
Wildlife Health Risk Assessment in Support of Decisions and Policies

OIE Collaborating Centre on Research Diagnosis
and Surveillance for Wildlife Pathogens

Canada



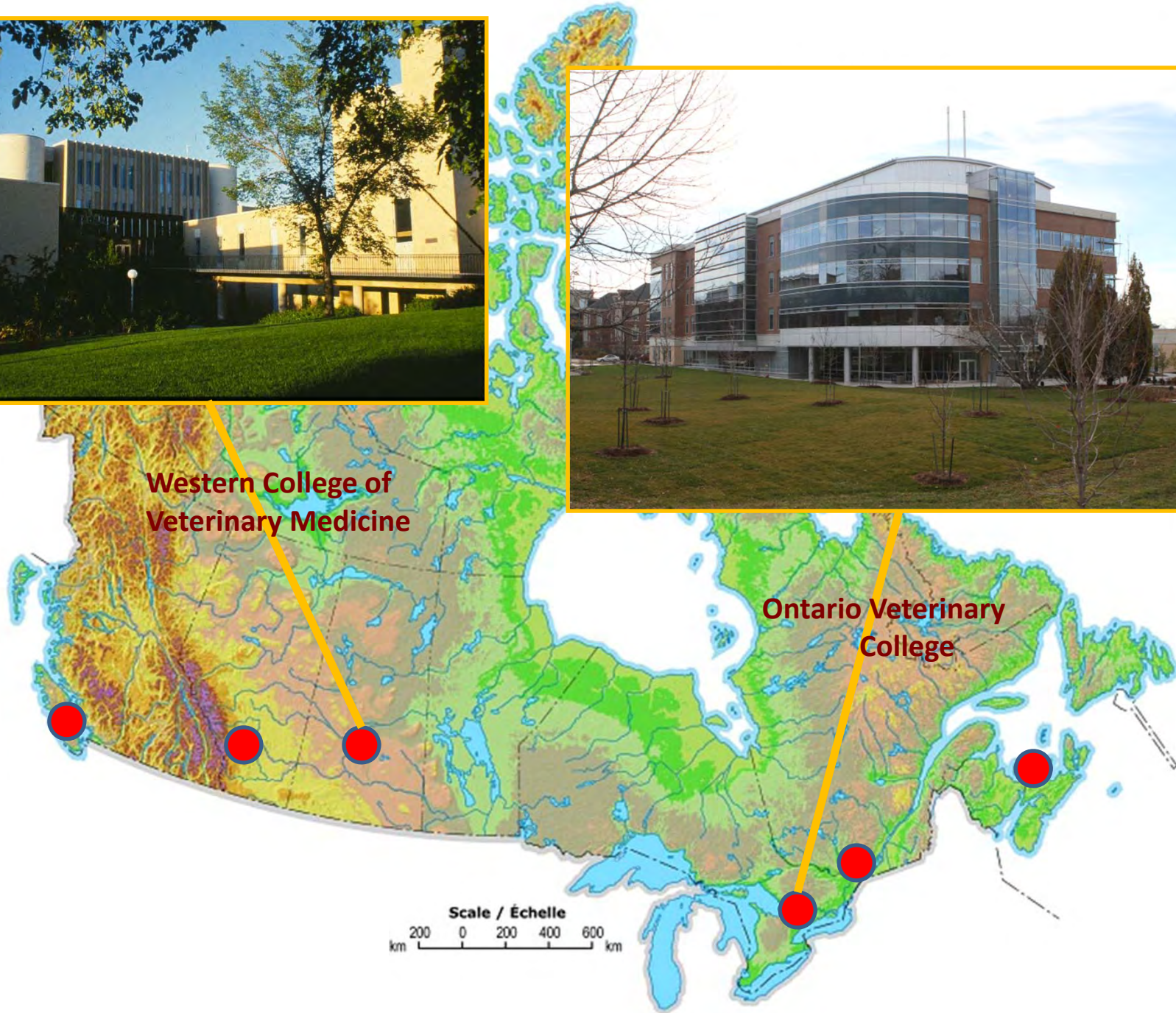
North and South America



Canadian Cooperative
Wildlife Health
Center



Centre
canadien coopératif
de la santé de la faune



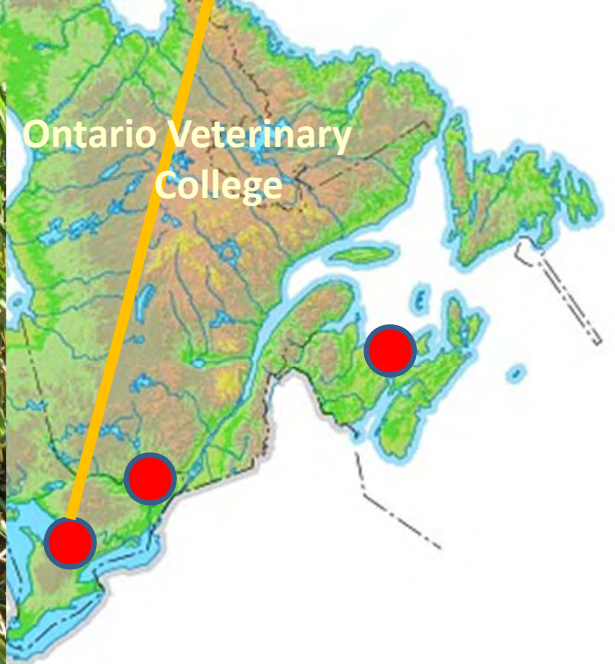
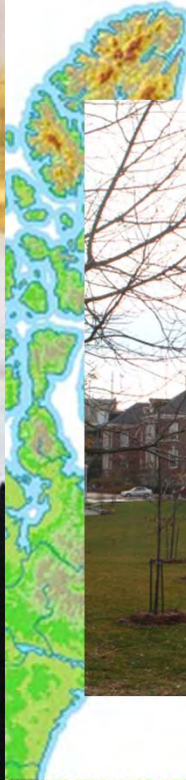
**Western College of
Veterinary Medicine**

**Ontario Veterinary
College**

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km km

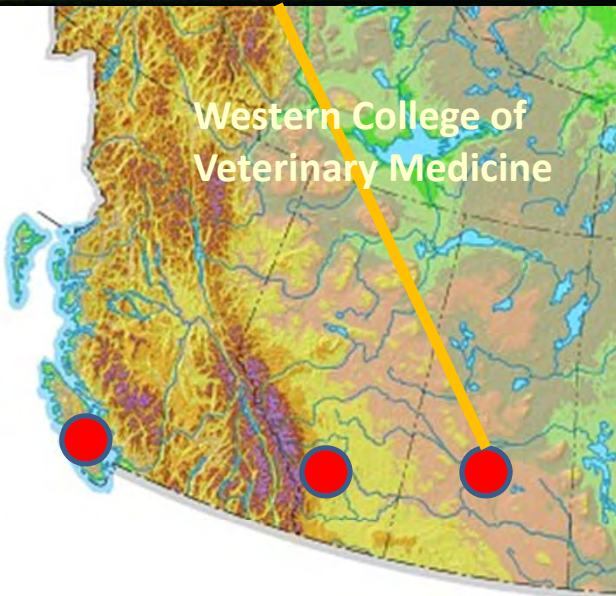


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Western College of Veterinary Medicine



200 km



Workshop Program

Two main topics

1. Wildlife Health Risk Assessment

- Practical
- Qualitative
- Many applications

2. Multi-criteria Decision Analysis (MCDA)

- Fitting Risk Assessment into the bigger decision framework
- Decision analysis for better decisions



Workshop Program

Learning Tools

- **Workbook**
 - Notes, Reference material, exercises
- **Presentations and Discussion**
 - All information is in the Workbook
- **Risk Analysis and MCDA in small groups**
 - You will do a wildlife health risk assessment
 - You will do a multi-criterion decision analysis



Wildlife Health Risk Assessment

Wildlife Health Risk Assessment: What is it?

A standard method used to evaluate potential health risks in activities involving wildlife

- **A rigorous & disciplined application of common sense**
- *OIE Terrestrial and Aquatic Animal Health Codes*



Wildlife Health Risk Assessment

Qualitative or Quantitative Health Risk Assessment

- Qualitative: - levels of risk
 - “Negligible,” “Low,” “Medium,” “High”
 - Most wildlife health risk assessments are qualitative
- Quantitative: - precise numerical values
 - “11.3% chance (CI: 0%-100%) of \$1 billion (CI: \$0 - \$10 billion) economic loss”
 - **Data for quantitative wildlife health risk assessment seldom exist**



Wildlife Health Risk Assessment

Why Do Wildlife Health Risk Assessment ?

“Wildlife Translocation” - moving wild animals - always includes potential health risks

- The health risks may be negligible
- The health risks may be very high

Health Risk Assessment allows you to evaluate risks before wildlife translocations or other actions they are carried out

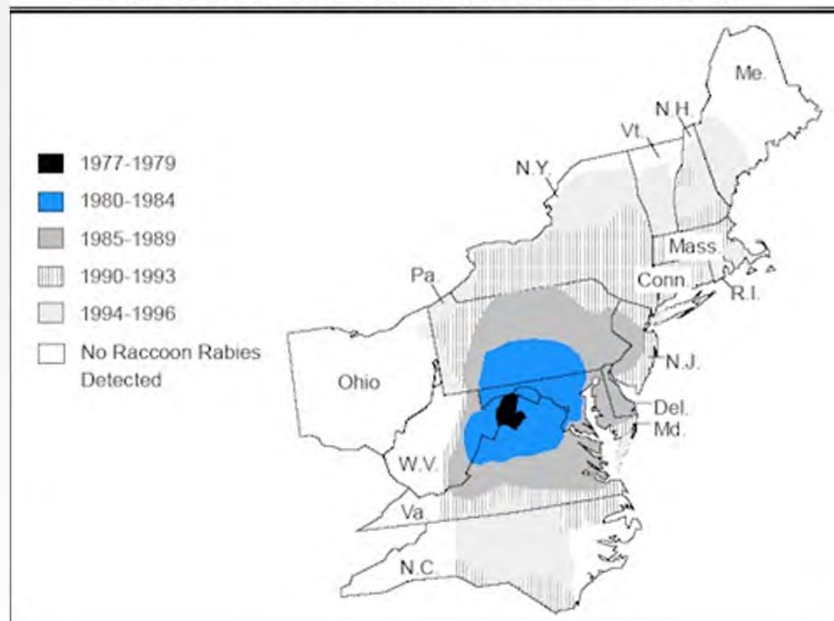


Some Wildlife Health Risk Disasters

Raccoon Rabies in North America

- 1977 – Raccoons translocated for hunting
- 2013 – 36 years of spreading rabies epidemic
- \$\$ hundreds of millions in new costs: treatment, control

Use "Go Back" on your browser to return to previous page



CDC, 1997

Spread of raccoon rabies, mid-Atlantic and north-eastern United States, 1977 - 1993

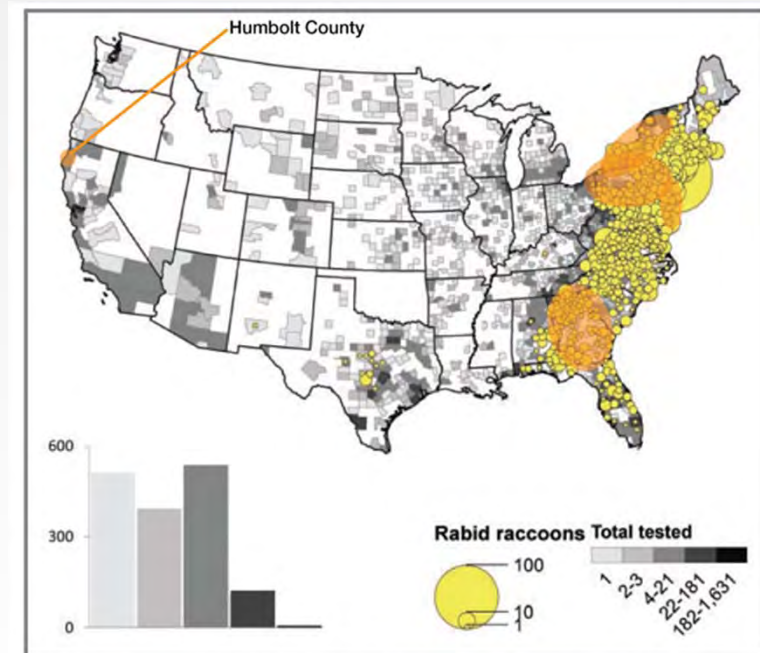


Figure 3—Reported cases of rabies involving raccoons, by county, 2010. Histogram represents numbers of counties in each category for total number of raccoons submitted for testing.

www.h



Some Wildlife Health Risk Disasters

Chytrid Fungus of Amphibians

- Transported around the world by commercial translocation of infected amphibians
- >200 species extinct or in steep decline





Wildlife Health Risk Assessment



Who can do a wildlife health risk assessment ?

- **You can !**
- **Does not require a specialist in risk assessment**
- **Best done by a small team with some knowledge of:**
 - The biology and diseases of species involved
 - The source and destination environments
 - The main consequences of concern: economics, human health, livestock health, etc.



Wildlife Health Risk Assessment

Who should NOT do a wildlife health risk assessment ?

- **The Stakeholders in the wildlife translocation or other wildlife activity, in favour or opposed**
 - Government decision-makers and managers
 - Businesses, land owners, conservationist, etc.
- **The risk assessment must be:**
 - Independent of the stakeholders
 - Transparent to everyone



Wildlife Health Risk Assessment

What to Do and How to Do It

What is "Risk"?

"Risk" has Two Components

1. The probability of an event occurring
2. The magnitude of the consequences if it does occur



Wildlife Health Risk Assessment

There are two Main Categories of Health Risks in wild animal translocations:

1. Animals will *carry pathogens into the destination ecosystem* that will cause harm to the destination ecosystem
2. The animals being moved *will encounter new pathogens in the destination environment* and will be harmed by these pathogens
 - Especially important in wildlife translocations



Seven steps in health risk assessment

1. The Translocation Plan
2. Identify the consequences to be assessed
3. Identify the health hazards to be assessed
4. Assess risk for the selected health hazards
5. Statement of overall risk & degree of uncertainty
6. Identify any additional hazards and risks
7. Identify options to reduce health risks



STEP 1: The Translocation Plan

- **Find out EXACTLY what is planned**
 - Number of animals, sex, age, dates, capture, transport
 - Source and destination ecosystems
 - Quarantine, health management, feed, release process

These details will affect the risk assessment

- **Find out what the decision-makers really need to know about health risks**
 - To make sure the Risk Assessment answers the right questions



STEP 2: Selection of Consequences to be Included

- There are many different kinds of negative consequences that might be associated with the health hazards of a wildlife translocation
- Decide which consequences to include and to exclude in the health risk assessment
 - Essential for transparency
 - Often determined by the agency requesting the health risk assessment
 - Essential to defining knowledge required on risk assessment team
- *The consequences selected determine the content, scale and usefulness of a health risk assessment*



Step 2

Some Categories of Consequences or Potential Negative Impacts

Consequences for:

Animal Health

Animal Welfare

Human Health

Human Economies

Environments and Ecological Services

Human Social, Cultural and Psychological Well-being

Politics and Governance

National Security



Who are the Stakeholders?

- **All the people and organisations affected in some way by the potential health hazards**
- **Important participants in Step 1 and Step 2**
- **Could include** (at both Source and Destination locations):
 - Government agencies: wildlife, agriculture, health, other
 - Local communities, business, land-owners
 - Non-government groups
 - International organizations: trade, conservation, health
- **Identifying the main stakeholders can help select the consequences to be included in the health risk assessment**
 - Reflect stakeholder concerns

(see Page 27)



STEP 3: Identification of Health Hazards

A. Make a comprehensive list of ALL possible health hazards.

1. Pathogens & diseases present in the source ecosystem that could be carried into the destination ecosystem by the translocated animals
2. Pathogens & diseases present in the destination ecosystem that could harm the translocated animals

Include pathogens in wildlife, domestic animals and people at source and destination



STEP 3: Identification of Health Hazards

B. Select a small number (2-4) of the most important health hazards for full assessment

Selection criteria - emphasize health hazards that:

- 1. Could be carried by translocated animals into the destination ecosystem**

and – May infect wildlife, domestic animals or people

and – May have significant consequences if this occurs

- 2. Are present in the destination ecosystem**

and – May cause significant harm to the animals being translocated



STEP 4: Assessment of Health Risks

Assess the health risks for each health hazard selected in for full risk assessment

- a) The *probability* that the hazard will occur
- b) The *magnitude of consequences* or harm if it does occur

This takes a lot of time !



STEP 4: Assessment of Health Risks

Assessing Risk - What to do

For Each Selected Health Hazard (pathogen)

- 1. Estimate the probability that the pathogen will arrive in the destination ecosystem (“entry assessment”)**

(Negligible – Low – Medium – High)

- 2. Estimate the probability that susceptible species in the destination environment will be exposed to the pathogen (“exposure assessment”)**

(Negligible – Low – Medium – High)



STEP 4: Assessment of Health Risks

Assessing Risk – What to do

- 3. Estimate the *magnitude of consequences* if the pathogen infects susceptible species in the destination ecosystem**
 - For each of the categories of consequences to be included in the Risk Assessment.

(Negligible – Low – Medium – High)



STEP 4: Assessment of Health Risks

Assessing Risk - What to do

- 4. Estimate the probability that the translocated animals will be exposed to the pathogen in the destination ecosystem**

(Negligible – Low – Medium – High)

- 5. Estimate the *magnitude of consequences* if the pathogen infects the translocated animals in the destination ecosystem**

- For each of the categories of consequences to be included in the Risk Assessment.**

(Negligible – Low – Medium – High)



STEP 4: Assessment of Health Risks

So, How can you do this?

- **E.G.:**

**“Estimate the probability that the pathogen will arrive in the destination ecosystem (“entry assessment”)
(Negligible – Low – Medium – High)”**



STEP 4: Assessment of Health Risks

Information needed for "entry assessment"

Some examples:

- Identity and ecology of the disease-causing agent
- Anticipated range and distribution of the released animals
- Presence/absence of potential pathogen vectors
- Calendar period of translocation and release
- Primary, secondary and intermediate hosts of the disease-causing agent in the destination ecosystem: number, variety and distribution
- Human and animal numbers and distribution in the destination ecosystem
- Mode of transmission of the pathogen
- Relevant customs and cultural practices in the destination ecosystem
- Animal health legislation and compliance
- Biotic and abiotic factors that affect the pathogen's survival

(See Workbook page 31-32)



STEP 4: Assessment of Health Risks

Guidelines	
Estimating and rating <u>qualitatively</u> the probability that a pathogen will enter the destination ecosystem with the translocated animals.	
Rating = Negligible	The probability of entry is extremely low or negligible given the combination of factors described above.
Rating = Low	The probability of entry is low but clearly possible given the combination of factors described above.
Rating = Medium	Entry is likely, given the combination of factors described above.
Rating = High	Entry is very likely or certain, given the combination of factors described above.

(See Workbook page 32)



STEP 4: Assessment of Health Risks

Judge the health risk:

“The health risk associated with this pathogen is
”

(negligible – low – medium – high)

- This is your judgement: Objective & Subjective elements
- Must balance and weight:
 - probability of occurrence
 - Magnitude of negative consequences
- There is no formula for making this judgement
- You must fully explain your reasoning

(See workbook page 39)



STEP 5: Assessment of Overall Health Risk

- “The health risk associated with this wildlife translocation is _____”

(negligible, low, medium, high)

- **Combine the risk assessment for each pathogen** into an overall risk assessment for the proposed wildlife translocation
- **A judgement** – objective and subjective – for which there is no formula
- **Fully explain your reasoning**



STEP 6: Additional hazards and risks

- Sometimes applies, sometimes not
- See Workbook pages 42-43)

STEP 7: Reduction of Risk

- Assessor often can identify ways in which risk health risks could be reduced
 - Alternative procedures, quarantine, vaccination, etc.
- List and explain all such possibilities, alternatives, options



Health Risk Assessment: Table-top Exercise in Small Groups

**You will now do a Health Risk Assessment
for a proposed translocation of
American Bison from Canada to Atlantis**

Workbook Page 45





Small Group Exercise - Bison for Atlantis

Quickly read pages 45-48 for general orientation (5 minutes)

- *Who is requesting a health risk assessment?*
- *Who else is concerned about the bison translocation?*



Small Group Exercise - Bison for Atlantis

Quickly read pages 45-48 for general orientation

- Who is requesting a health risk assessment?
- Who else is concerned about the bison translocation?

Sheep farmers	Animal Rights & Welfare NGO
Aboriginal people	Aggregate Exports Inc.
Business Association	Natural History Club



Small Group Exercise - Bison for Atlantis

STEP 1 - The Translocation Plan

A. Read the Translocation Plan - Pages 49-50
(5 minutes)

B. Source and Destination Ecosystems

- Divide your group in two halves
 - One half read "Source Ecosystem" (pg 50-52)
 - One half read "Destination Ecosystem: (pg 53-55)
 - 10 minutes
- Each half present the main features of the Source and Destination ecosystems to the other half of the group - 5 minutes each



Small Group Exercise - Bison for Atlantis

STEP 2 - Selection of Consequences to be considered **(15 minutes)**

- **Work together as a group at each table**
- **Follow the instructions**
on pages 56-59



Small Group Exercise - Bison for Atlantis

STEP 3 - Identification of Health Hazards (20 minutes)

Workbook Pages 60-67

**Please read and
follow instructions**



Small Group Exercise - Bison for Atlantis

STEP 4 - Risk Assessment for Selected Health Hazards (30 minutes)

Workbook pages 68-75

Please read and follow instructions



Small Group Exercise - Bison for Atlantis

STEP 6 - Additional Hazards and Risks
– Omitted from this table-top exercise

STEP 7 - Risk Reduction
Workbook page 77

Please read and
Follow instructions