A risk-based approach to recovery planning under SARA: *Case study of the wide-ranging and elusive woodland caribou in Canada*

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- **Forest-dwelling caribou; broadly distributed but uncommon**
  - **~50% historic range lost; many populations declining**

Environment Canada / Environnement Canada — Canada

Distribution of Woodland Caribou, Boreal population, in Canada

LEGEND
- Woodland Caribou, Boreal population
- Southern Extent of Historical Woodland Caribou Distribution

Range Boundaries Updated June 2012

ALASKA (U.S.)
YUKON
WHITEHORSE
YELLOWKNIFE
NORTHWEST TERRITORIES
NUNAVUT
IQALUIT
HUDSON BAY
QUEBEC
NEWFOUNDLAND AND LABRADOR
ST. JOHN'S
MANITOBA
SASKATCHEWAN
REGINA
WINNIPEG
P.E.I.
CHARLOTTETOWN
N.B.
FREDERICTON
N.S.
HALIFAX
QUÉBEC
ONTARIO
OTTAWA
TORONTO
UNITED STATES OF AMERICA
ATLANTIC OCEAN
Baltimore
N
0 135 270 405 540 km

Recovery Strategy for the Woodland Caribou (*Rangifer tarandus caribou*), Boreal population, in Canada

Woodland Caribou, Boreal population

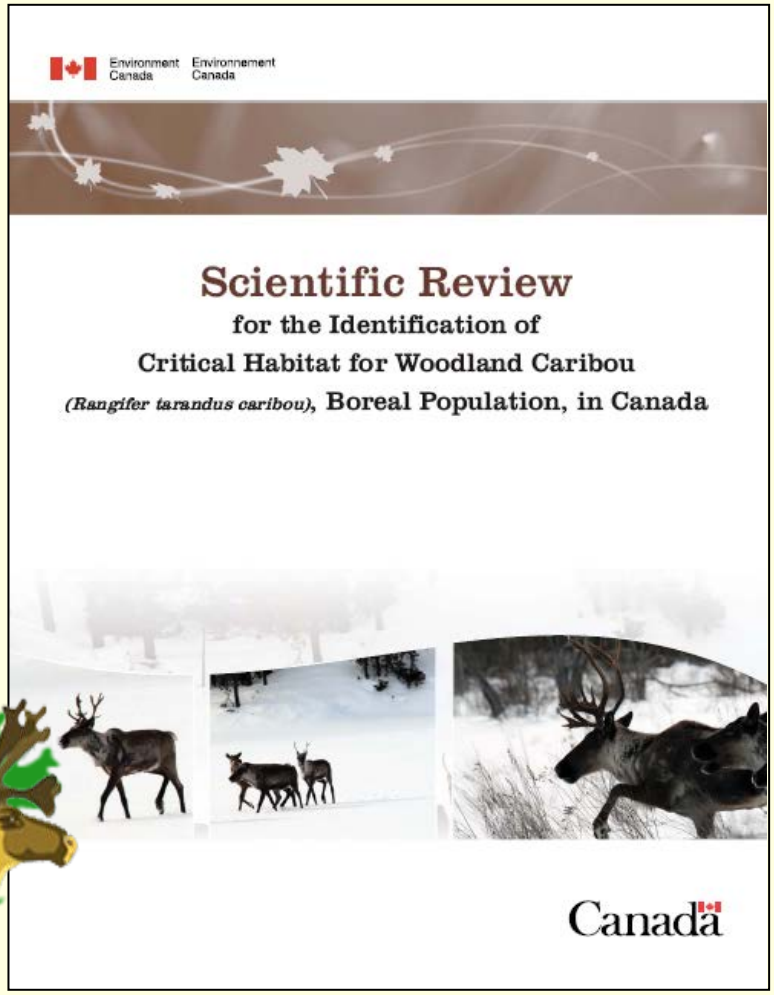
2002 - Assessed as *Threatened*
2003 - Listed under SARA
2012 - National Recovery Strategy

Recovery goal:

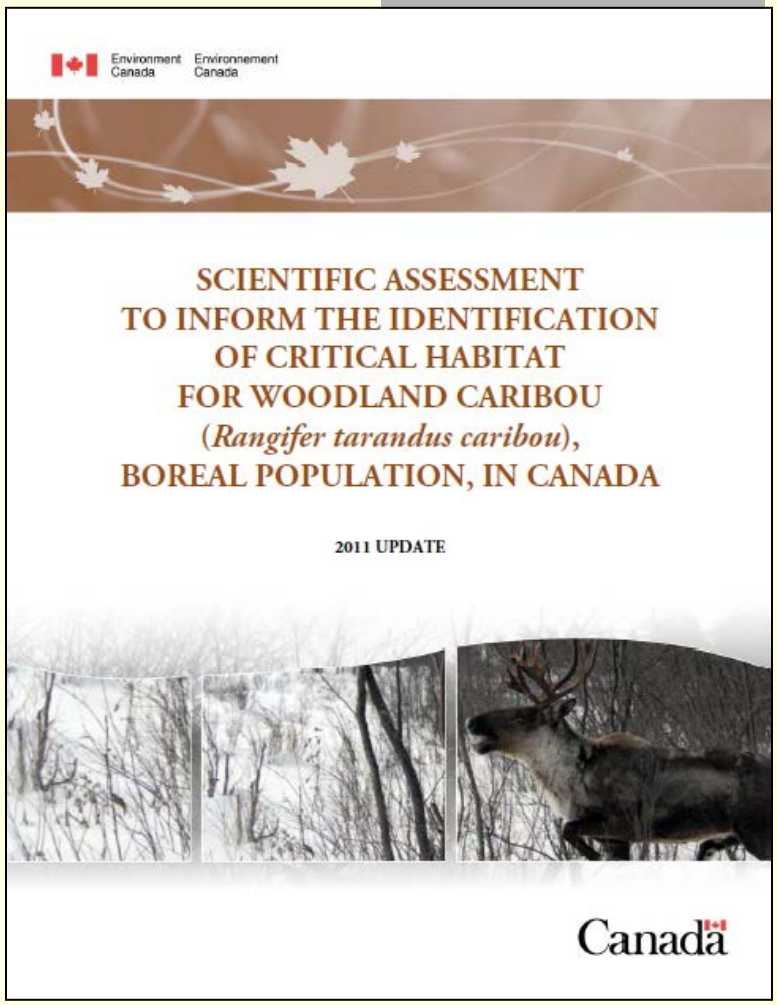
To achieve <u>self-sustaining local populations in all boreal caribou ranges</u> throughout their current distribution in Canada, to the extent possible.

2012

Scientific Review of Critical Habitat

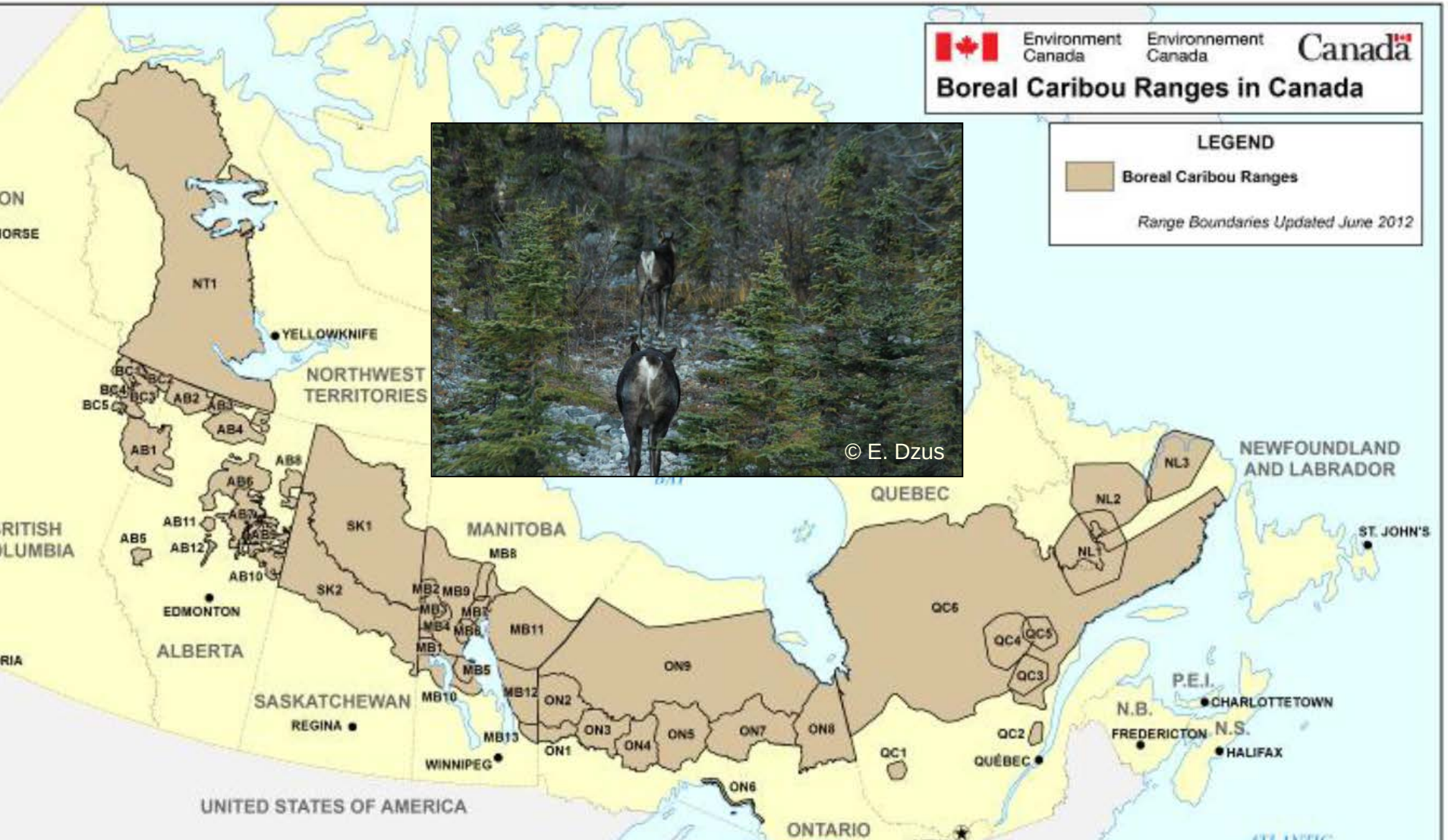


Phase 1, completed 2008 released 2009



Phase 2, released 2011

- 51 local population ranges identified across Canada
- Local population and range size varies enormously
- Environmental conditions vary considerably across populations
- A common need for large undisturbed areas of conifer-dominated forest



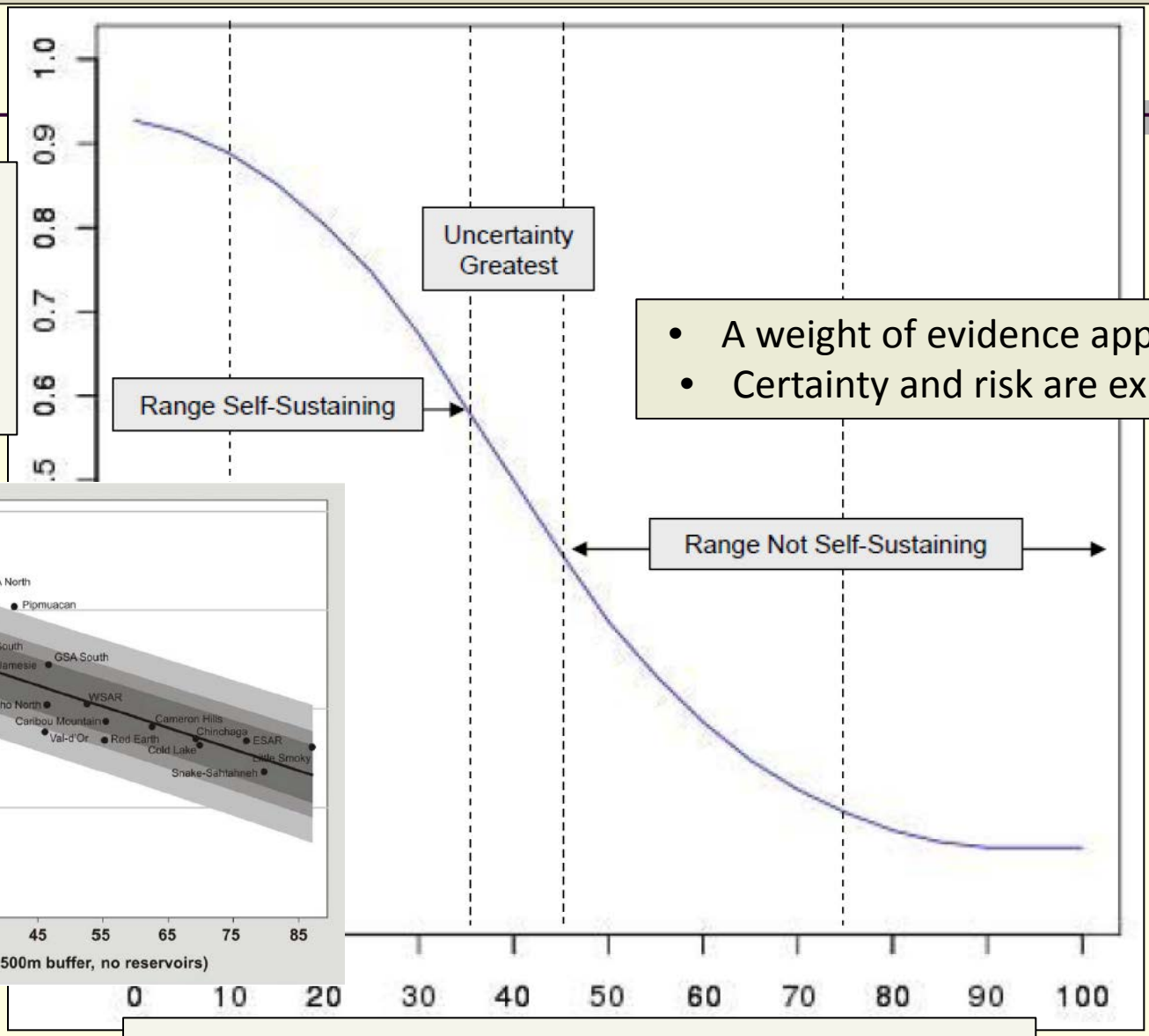
The major threat to boreal caribou populations is habitat loss and alteration associated with industrial disturbance

- Direct Effects

- Indirect Effects – spatial separation is a key life history strategy

Disturbance within caribou ranges is a reliable proxy for population condition, relative to the recovery goal.

Probability of Caribou Range Supporting a Self-sustaining Population



- A weight of evidence approach
- Certainty and risk are explicit.

The Recovery Strategy expresses a clear policy statement relative to risk and the likelihood of achieving the recovery objective.

Recovery Strategy for the Woodland Caribou (*Rangifer tarandus caribou*), Boreal population, in Canada

Woodland Caribou, Boreal population

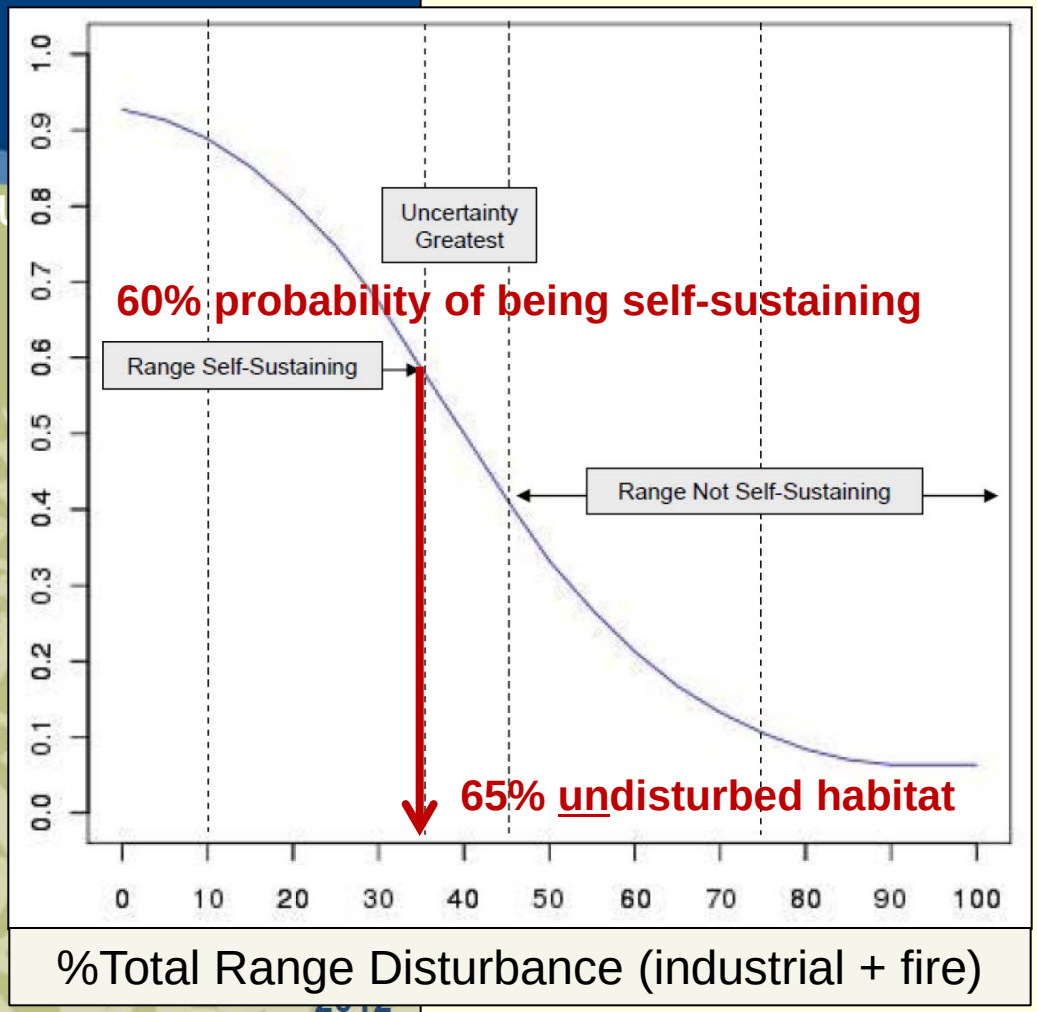
2012

"This recovery strategy identifies 65% undisturbed habitat in a range as the disturbance management threshold, which provides a measurable probability (60%) for a local population to be self-sustaining."

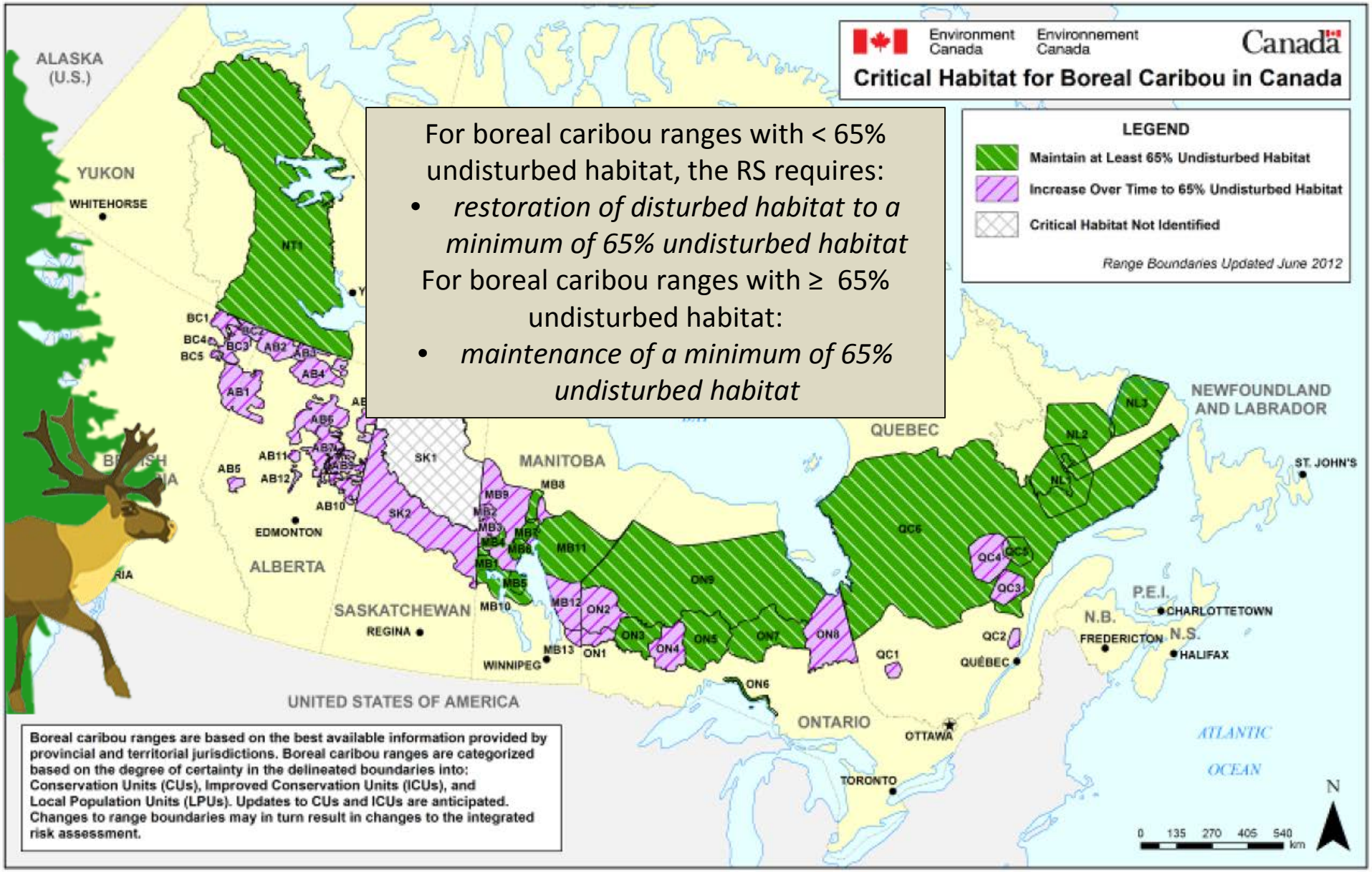
The identified management threshold is *not an ecological transition point*, but *a social choice* informed by science.

Recovery Strategy for the Woodland Caribou (*Rangifer tarandus caribou*), Boreal population, in Canada

Woodland Caribou, Boreal popu



Critical habitat for boreal caribou populations is defined at the range scale, based on the management threshold.



Strengths of this approach…

- Addresses the challenge of managing a wide-ranging "at risk" species with limited population information
- Establishes an appropriate scale for managing habitat that is respectful of spatial and temporal dynamics
- Facilitates consideration of cumulative effects
- Clearly distinguishes the scientific basis for decision-making from social choice
- Explicitly acknowledges uncertainty and risk
- Allows for regional variation in implementation

The challenges of implementation…

- The seductive power of a prescriptive solution
  - The probabilistic approach is forgotten in the search for the holy grail of recovery ("just tell me what I need to do")
- Managing to thresholds, not in consideration of them
- Uncertainty and risk are implied, but no longer explicit

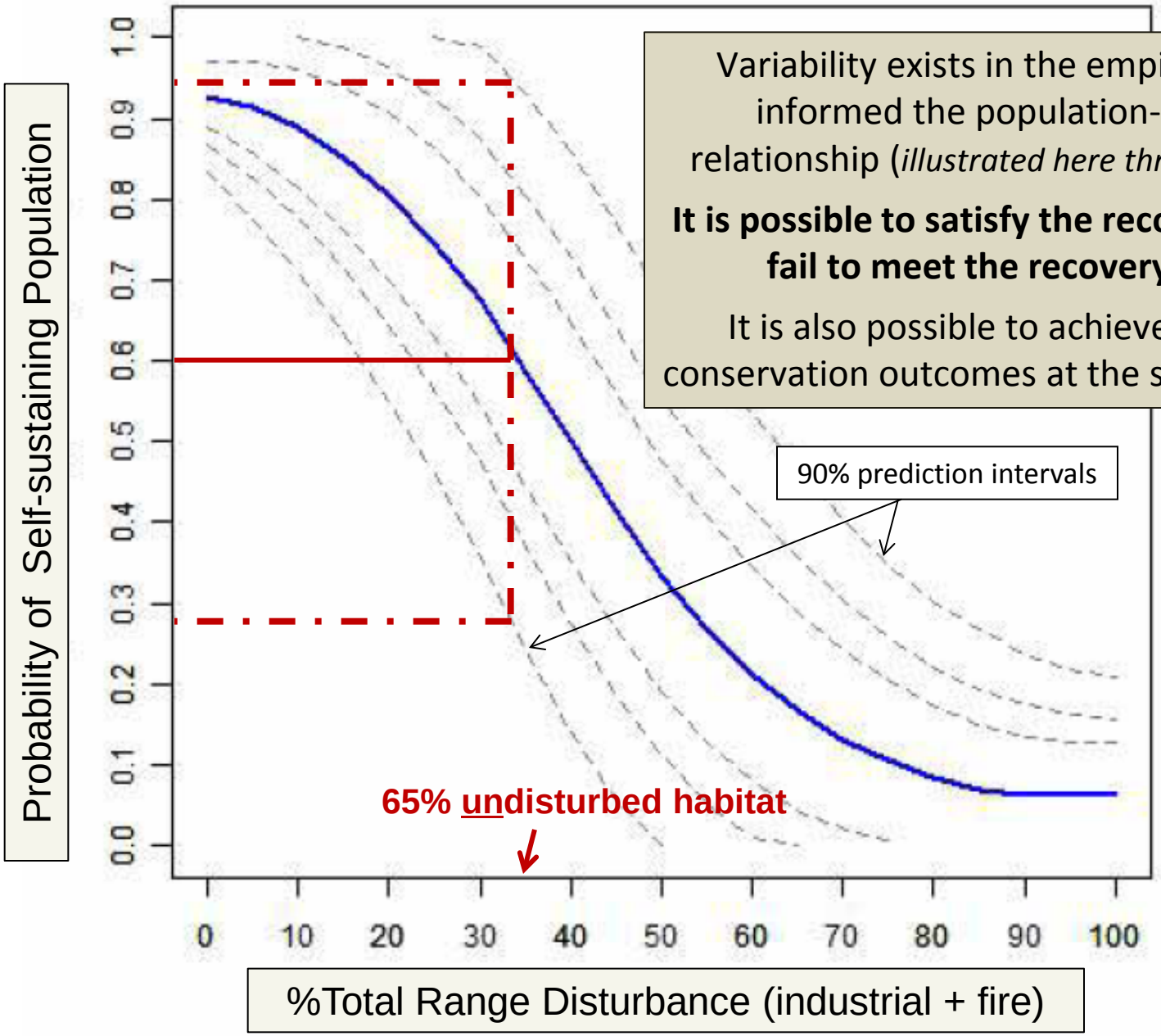
For boreal caribou ranges with less than 65% undisturbed habitat, the RS requires:

- *restoration of disturbed habitat to a minimum of 65% undisturbed habitat*

For boreal caribou ranges with greater than or equal to 65% undisturbed habitat:

- *maintenance of a minimum of 65% undisturbed habitat*

With uncertainty, there is both risk and opportunity….



Variability exists in the empirical data that informed the population-disturbance relationship (*illustrated here through simulation*).

It is possible to satisfy the recovery criteria but fail to meet the recovery objective.

It is also possible to achieve much better conservation outcomes at the same habitat cost.

Of means and ends and the path in between…

- The National Recovery Strategy is built on a scientific foundation that embraced uncertainty and encouraged adaptation, but the strategy itself leans towards being institutionally inert.
  - Management of socio-political risk through fixed thresholds, rather than maximizing conservation outcomes.
  - Implementation is carried out by the provinces
- In order to address both limitations in the availability of population data, and the needs of a wide-ranging species in a dynamic environment, a proxy for the recovery goal was used.
  - Management of range-level disturbance as a means to an end.

Of means and ends and the path in between…

- An integrated, pro-active approach would lever the uncertainty to accelerate learning and improve the prospects for recovery.
  - What suite of environmental conditions contributes to better than expected population outcomes?
- Uncertainty also warrants a precautionary approach.
  - Uniform and naïve application of disturbance thresholds could result in further population declines.

Thank you….