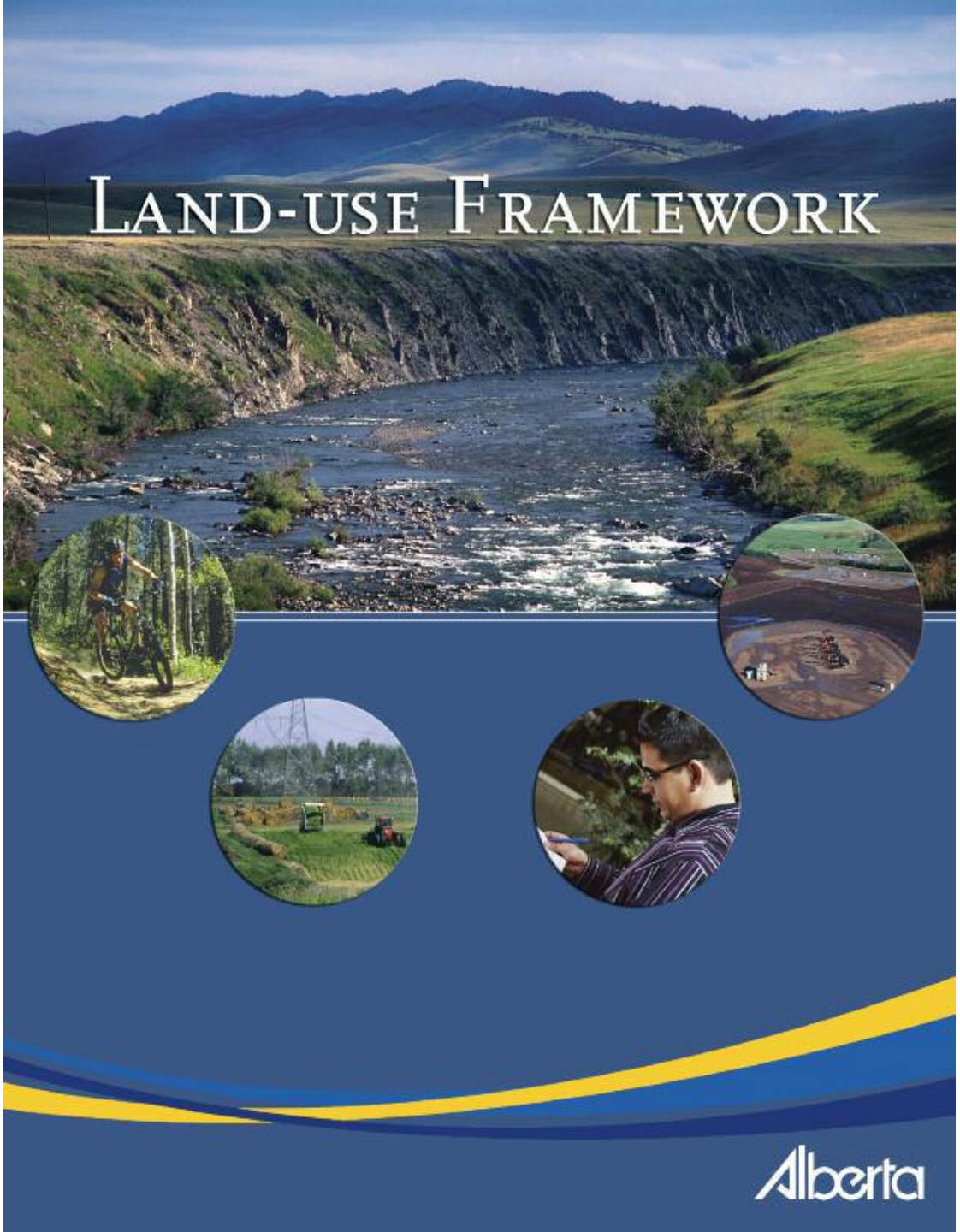
Thresholds in the Land Use Framework: The Science-Policy Linkage

Dan Farr

Land Use 2016



Outline

1. Why we're talking about biodiversity thresholds
2. Management thresholds vs ecological thresholds
3. Biodiversity change & the role of monitoring

South Saskatchewan Region

Biodiversity Management Framework

V.1.0 November 20, 2015

DRAFT

environmental • social • economic

Land use Framework

Alberta Government

Risk = Management Strategy

Ecological risk

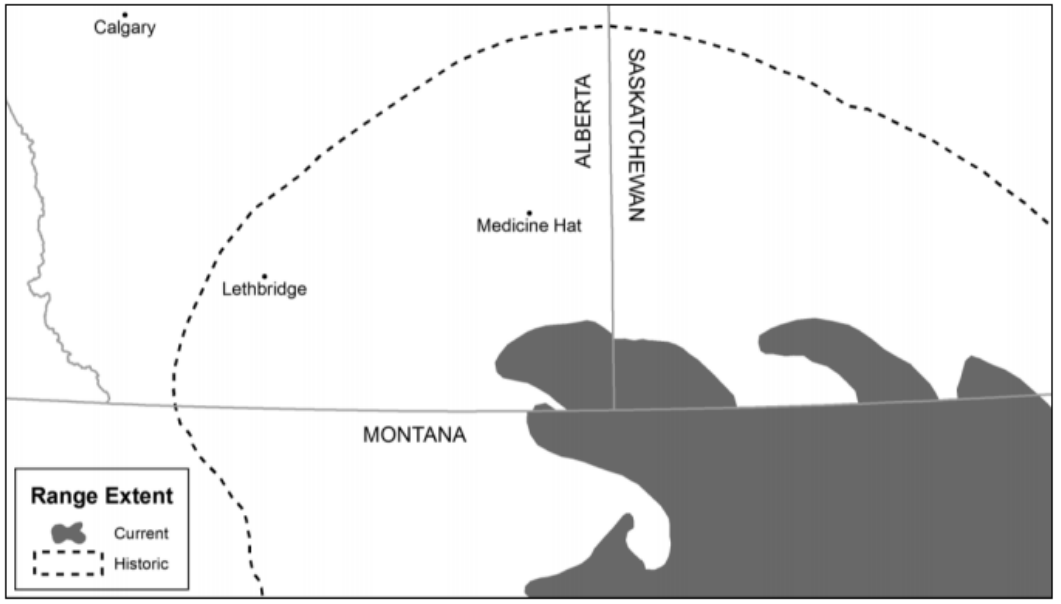


Figure 2. Historical and current range of sage-grouse in Alberta and Saskatchewan.

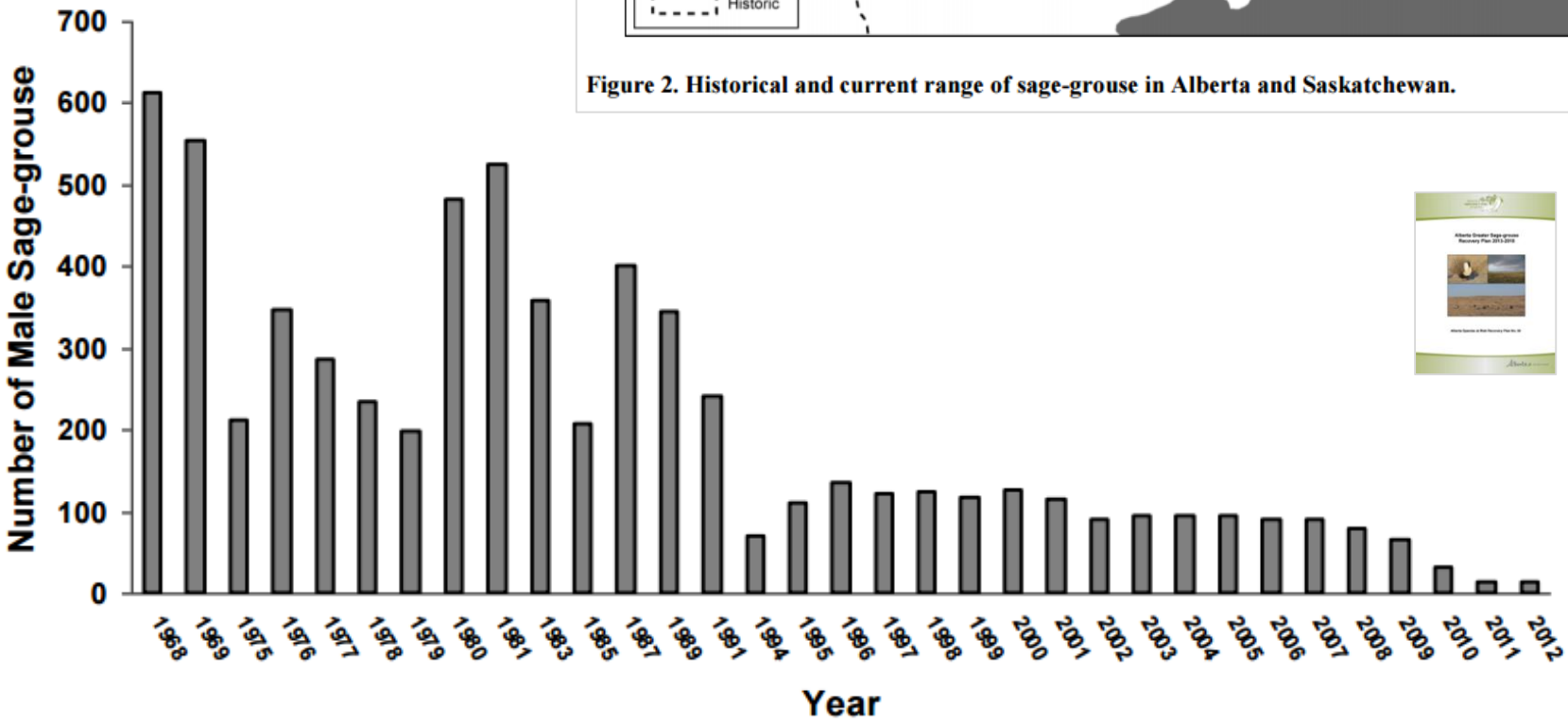


Figure 3. Annual sage-grouse lek surveys 1968–2012.

Alberta Environment and Sustainable Resource Development 2013

Legal risk

CANADA

CONSOLIDATION

CODIFICATION

Emergency Order for the Protection of the Greater Sage-Grouse

Décret d'urgence visant la protection du tétras des armoises

SOR/2013-202

DORS/2013-202

Current to April 12, 2016

Last amended on March 7, 2014

À jour au 12 avril 2016

Dernière modification le 7 mars 2014

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http://laws-lois.justice.gc.ca

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http://lois-laws.justice.gc.ca

2011

ecojustice

APPROACH ISSUES PEOPLE VICTORIES BLOG SUPPORT

Fighting for emergency protections for the greater sage-grouse

Alberta Wilderness Association, Wilderness Committee, Nature Saskatchewan, Grassland Naturalists v. Federal Environment Minister

2013

Endangered sage grouse to be protected by emergency order

Unprecedented move comes after environmental groups sue federal government

CBC News Posted: Sep 17, 2013 2:22 PM ET | Last Updated: Sep 18, 2013 12:40 PM ET

2014

CITY NEWSROOM

City seeks compensation from federal government related to Emergency Protection Order

Posted Date: 9/26/2014

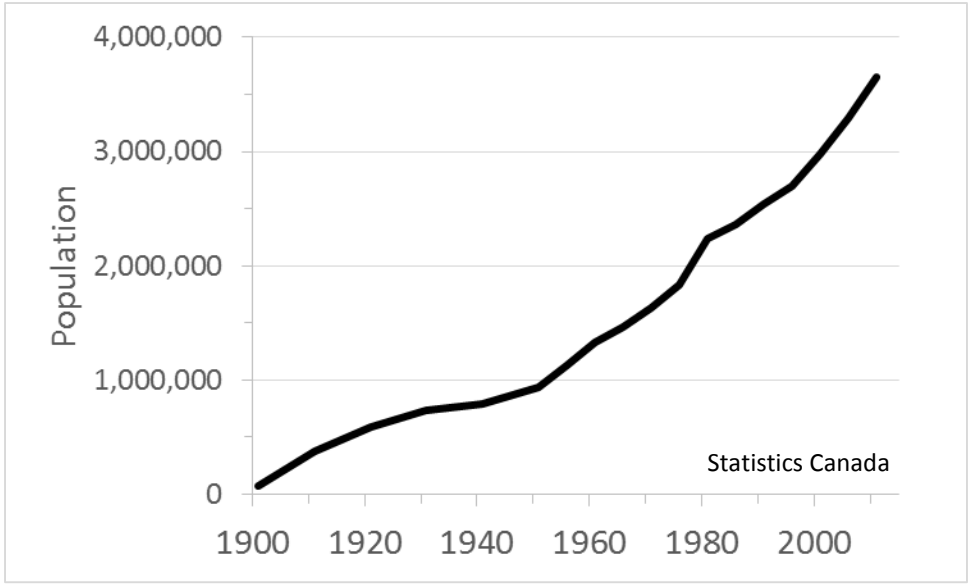
The City of Medicine Hat is seeking compensation from the federal government related to the Emergency Order for the Protection of the Greater Sage-Grouse.

The larger issue

- 70 species at risk in S Sask region
  - 80% of Alberta's species at risk
- 48% loss of natural habitat
  - Highly modified landscape
- Disruption of natural processes
  - Wildfire, flooding, bison

Drivers

- Increasing population
- Land conversion
  - Agriculture
  - Energy
  - Residential
- Invasive species



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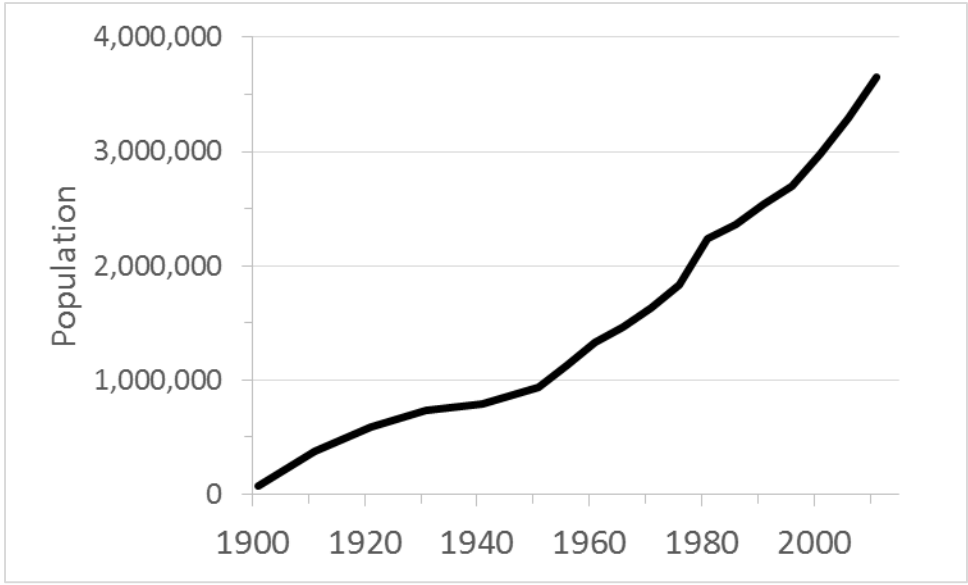

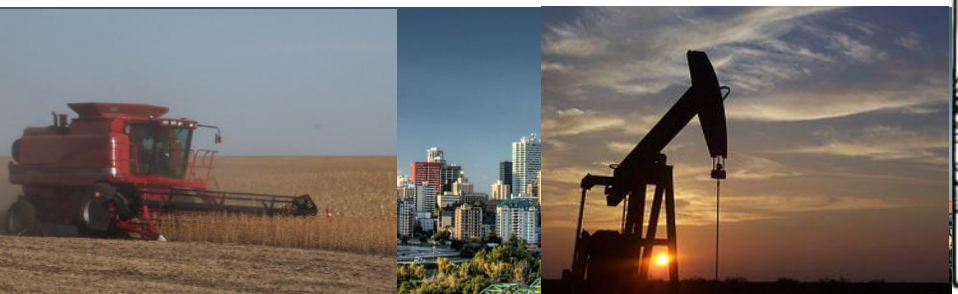

Response to ecological & other risks

Indicators & monitoring systems

Indicators

- Biodiversity paralysis
- 2500+ species
- Habitats etc
- No canaries

Monitoring systems

- Monitoring-system-formerly-known-as-AEMERA
- ABMI
- Citizen science
- Well-positioned to detect changes in biodiversity

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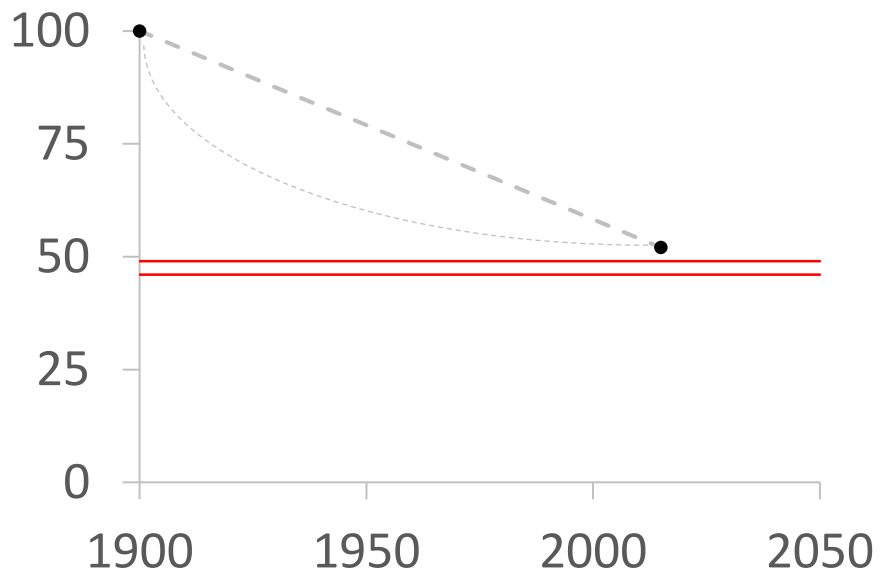
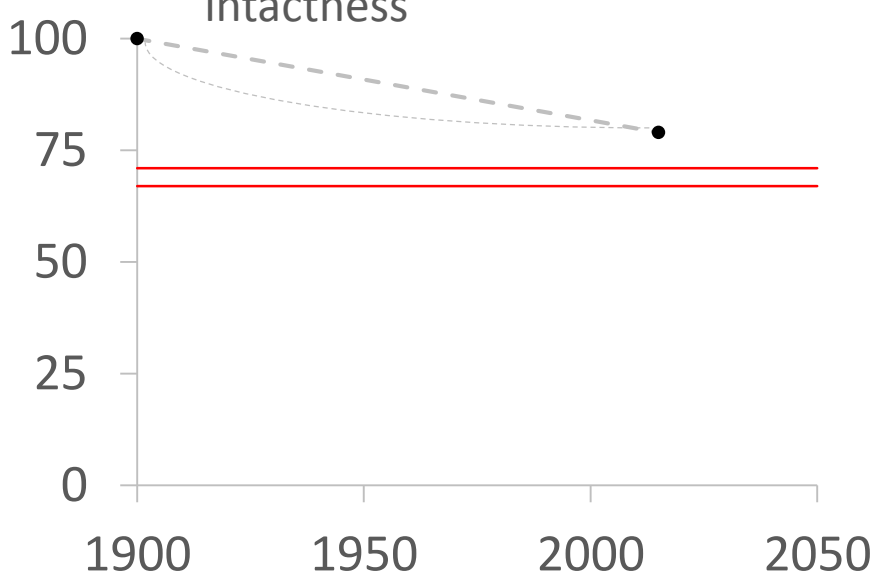
Thresholds (Triggers)

- Informed by science & policy
- Consider environmental, social & economic factors

Terrestrial native cover



Aquatic & wetland biodiversity intactness



Types of thresholds

Management threshold

= Trigger in BMF

- Evaluate condition relative to an objective
- Based on scientific, social & economic factors
- Reflects risk tolerance

Province of Alberta

ALBERTA LAND STEWARDSHIP ACT

Statutes of Alberta, 2009
Chapter A-26.8

Current as of December 11, 2013

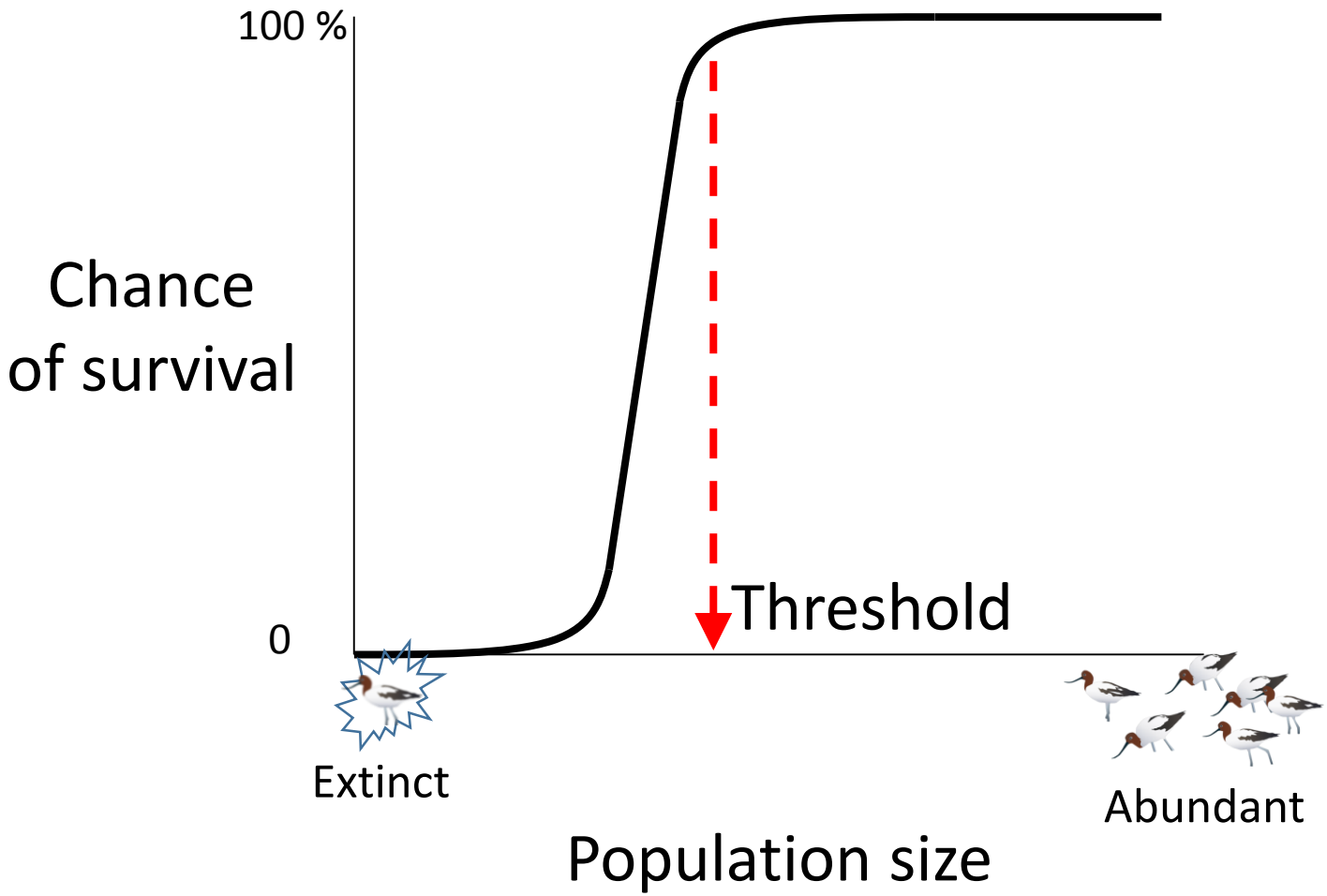
(ff) "threshold" has the meaning given to it in a regional plan and may include a limit, target, trigger, range, measure, index or unit of measurement;

Types of thresholds

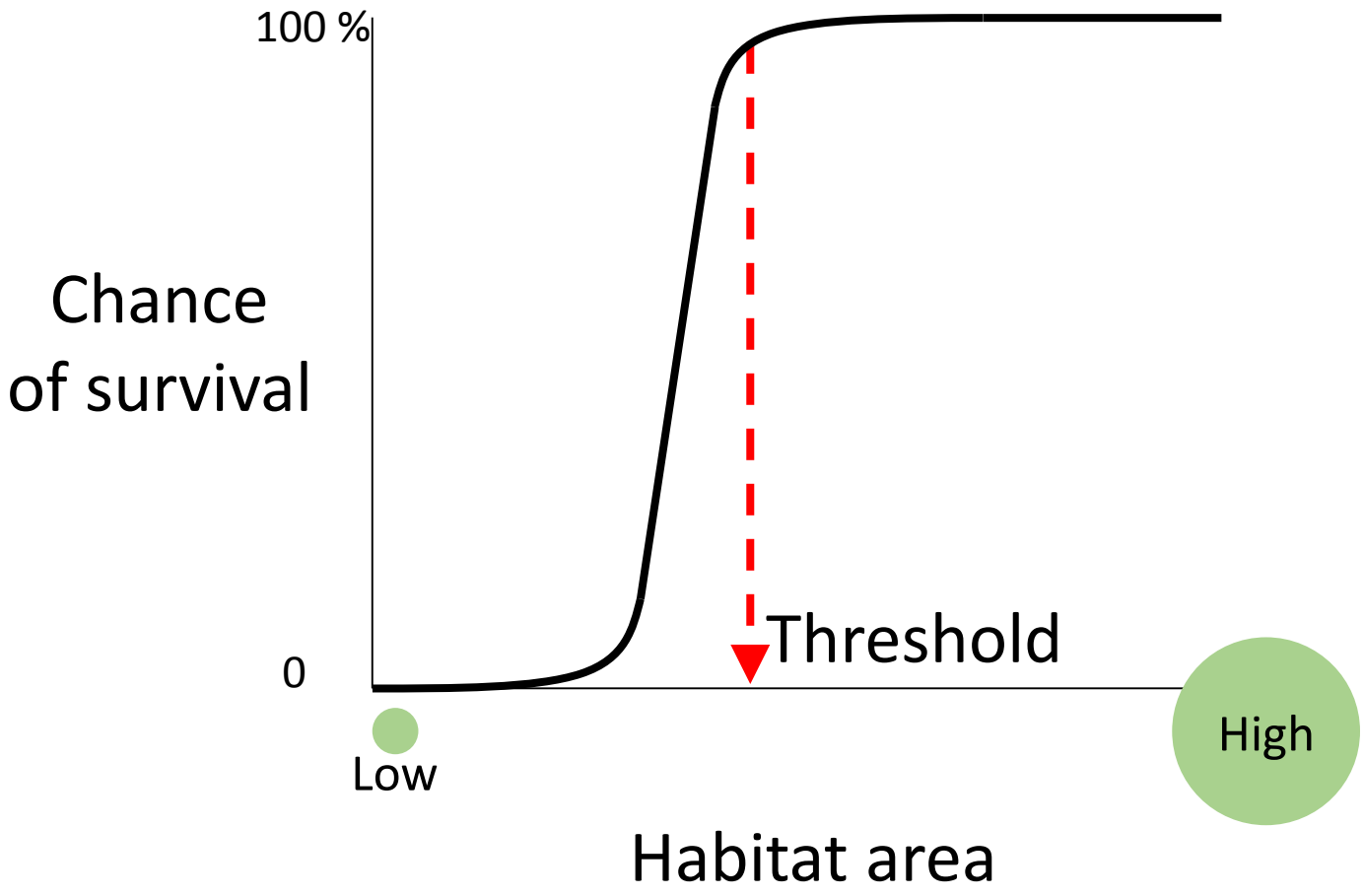
Ecological threshold

- Tipping point
- Rapid change from one ecological condition to another
- Based on observation or hypothesis
- Rarely observed
- Costly to reverse

Ecological threshold: Population size



Ecological threshold: Habitat area



Biodiversity change

- Controllable factors
  - Grassland conservation & stewardship

Sprague's Pipit

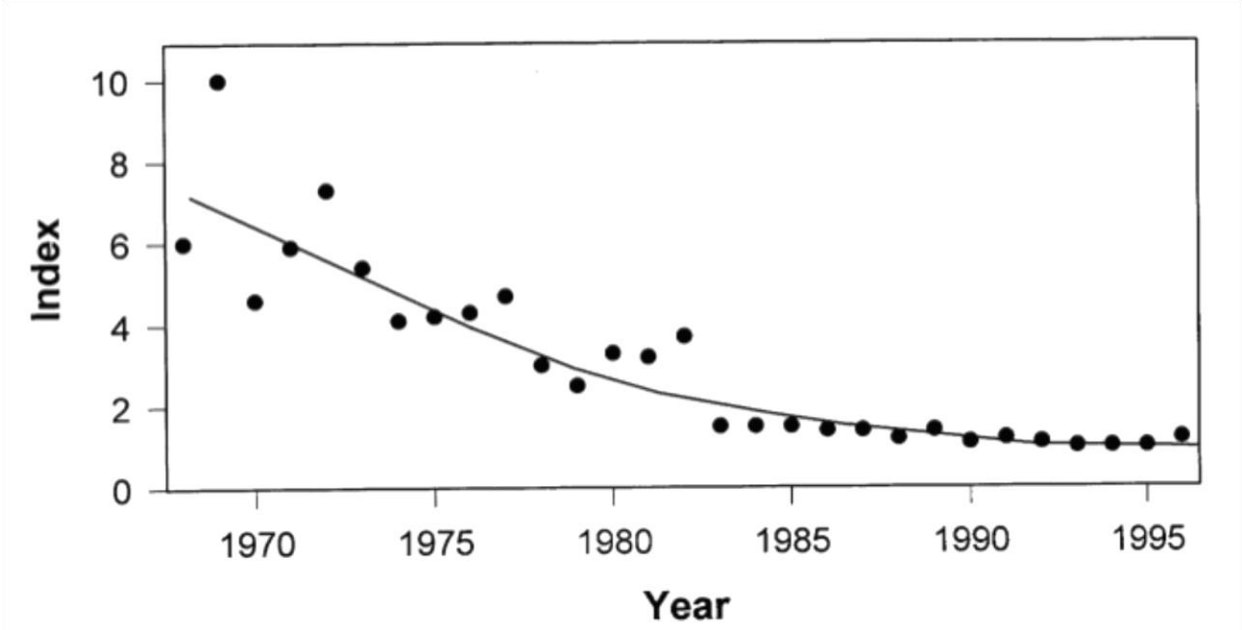
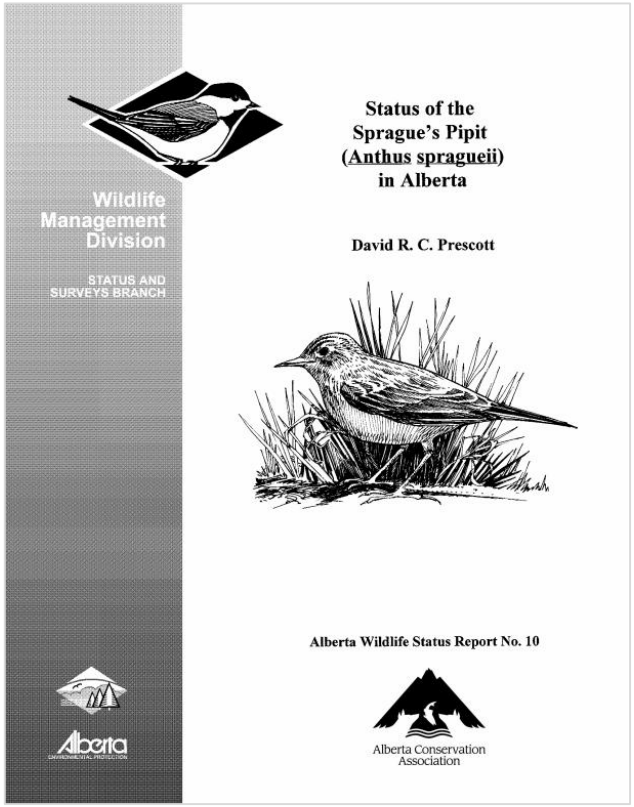


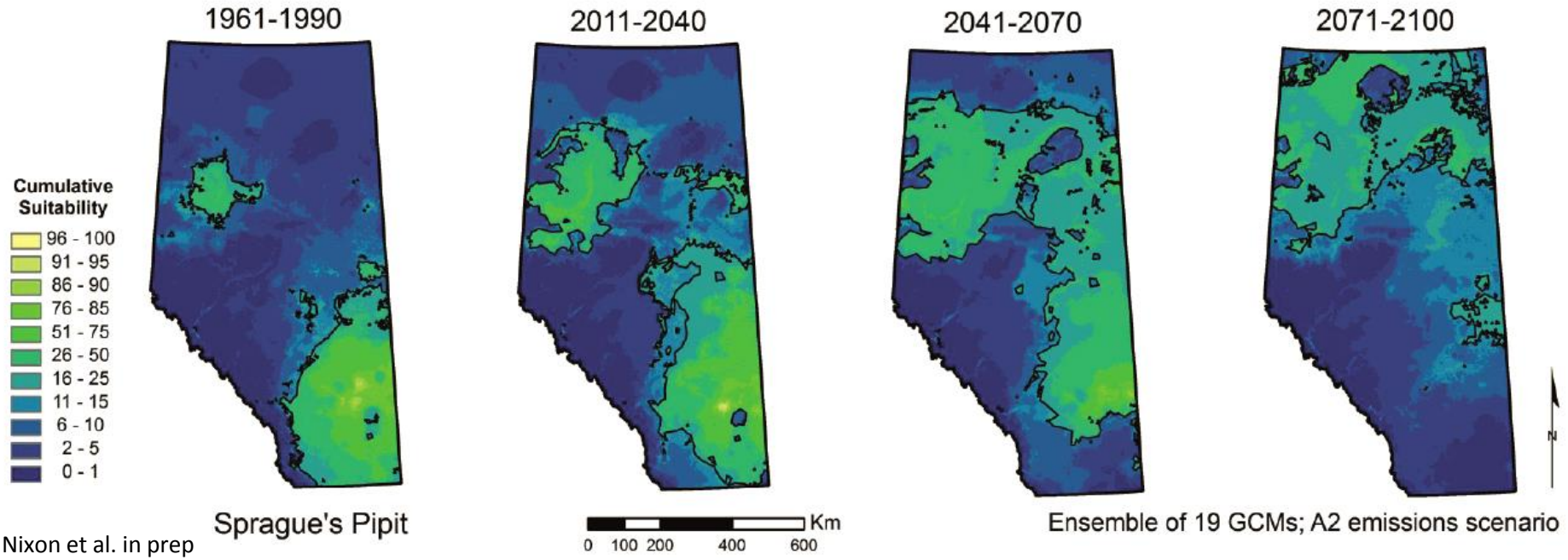
Figure 2. Index of population change of the Sprague's Pipit in Alberta, 1968-1996. Data are from the North American Breeding Bird Survey (modified from Sauer et al. 1996).



Biodiversity change

Sprague's Pipit

- Controllable factors
  - Grassland conservation & stewardship
- Uncontrollable factors
  - Climate change



Nixon et al. in prep

Biodiversity monitoring

- Geographic coverage
- Taxonomic coverage
- Capacity to detect change from land use vs other factors
- Research

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Breeding Bird Survey
Relevé des oiseaux nicheurs
Conteo de Aves en Reproducción

eBird

Summary

- Management thresholds can reduce ecological thresholds
  - Keep Scott out of court
- Useful monitoring systems will point to causes of biodiversity change
  - Land use vs climate
- Useful biodiversity management systems need participation from stakeholders & citizens
  - This isn't Kansas any more