

MOOSE MANAGEMENT IN THE OMINECA

..... since 1981

- WHAT is THE MANAGEMENT OBJECTIVE
- HOW is it IMPLEMENTED
- HOW WELL ARE WE DOING
- WHAT ABOUT OTHER OBJECTIVES

OVERALL MAMANGEMENT OBJECTIVE

- MEET HUNTER DEMANDS
 - Balance ecological and social demands of hunters against the capacity of the moose population to provide for present and future values

What are those demands....?

What are those values...?

High density

High success

Lots of animals

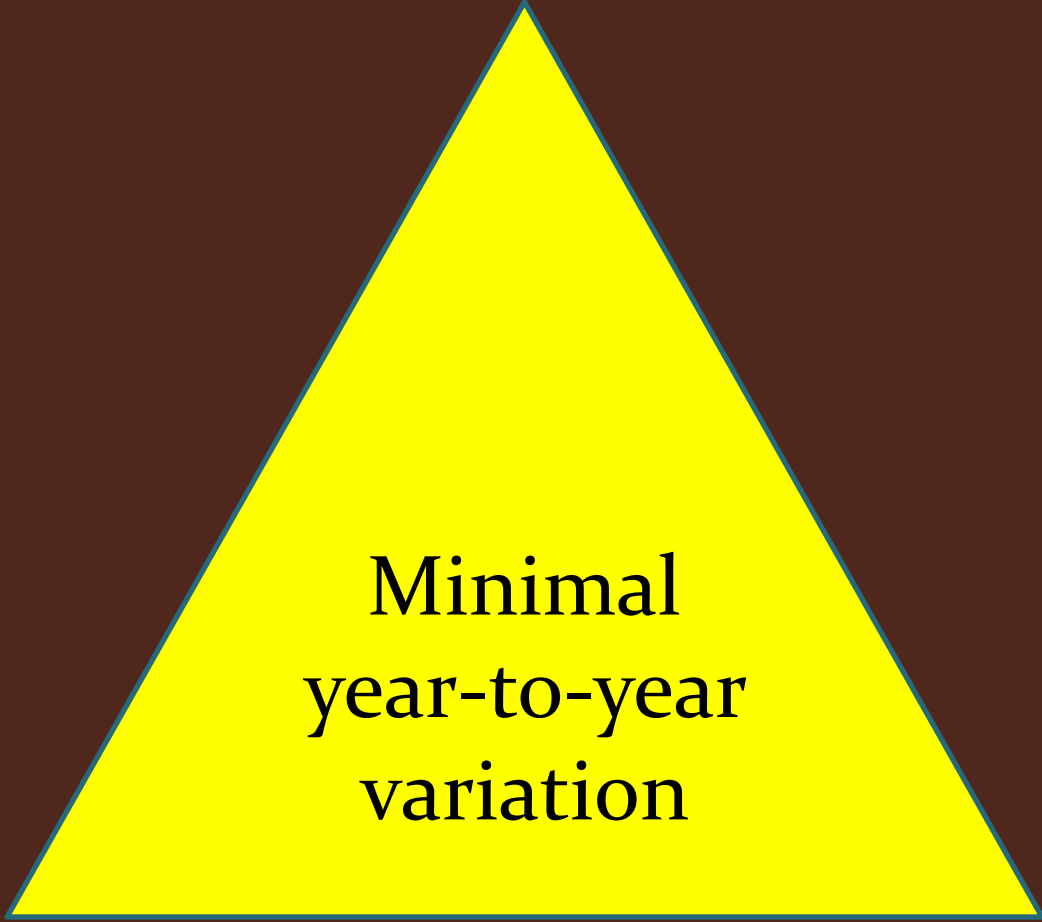
Lots of opportunity

Highly productive
populations

Healthy animals

Trophies

High AAH



Minimal
year-to-year
variation

High density

High success

Lots of animals

Lots of
opportunity

Healthy animals

High AAH

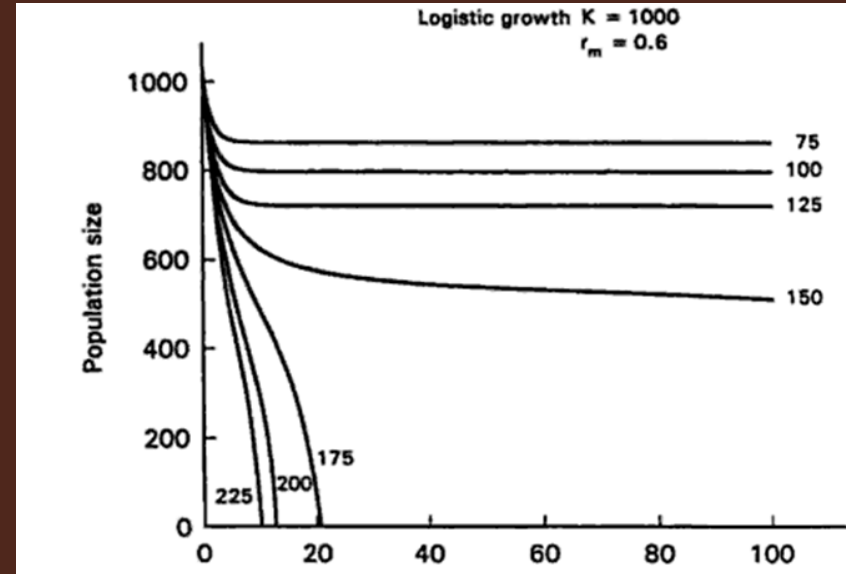
Highly productive
populations

Minimal
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Trophies

WHY CAN'T WE HAVE HIGH DENSITY AND HIGH YIELD?

- Because hunting reduces a population below carrying capacity
-
- Fine line between high yield and overexploitation



THE SOCIAL CHOICE VALUES ARE...

HOW IMPORTANT IS THE OPPORTUNITY TO GO HUNTING ?

WHAT RISK of OVEREXPLOITATION IS ACCEPTABLE ?

WHAT SUCCESS RATES ARE ACCEPTABLE ?

HOW IMPORTANT ARE TROPHIES vs MEAT

BULLS vs COWS or CALVES?

OVERALL MANAGEMENT OBJECTIVE

MEET HUNTER DEMANDS

DETAILED OBJECTIVE

ANNUAL ALLOWABLE KILL [AAH]

AAH IS A SOCIAL CHOICE INFORMED BY SCIENCE

- UNDERSTAND THE TRADE-OFFS BETWEEN HIGH DENSITY AND HIGH YIELD
- DESCRIBE THE MAXIMUM YIELD POSSIBLE
- ESTIMATE THE RISK OF OVER EXPLOITATION AS YIELD INCREASES
- HOW TO COME TO THE BEST COMPROMISE
e.g. STRUCTURAL DECISION MAKING

The management objective in the Omineca has clearly been to have a high annual allowable kill

Lots of opportunity

Little year to year variation

Relatively high risk

WHAT DO WE DO TO ACHIEVE THOSE OBJECTIVES ?

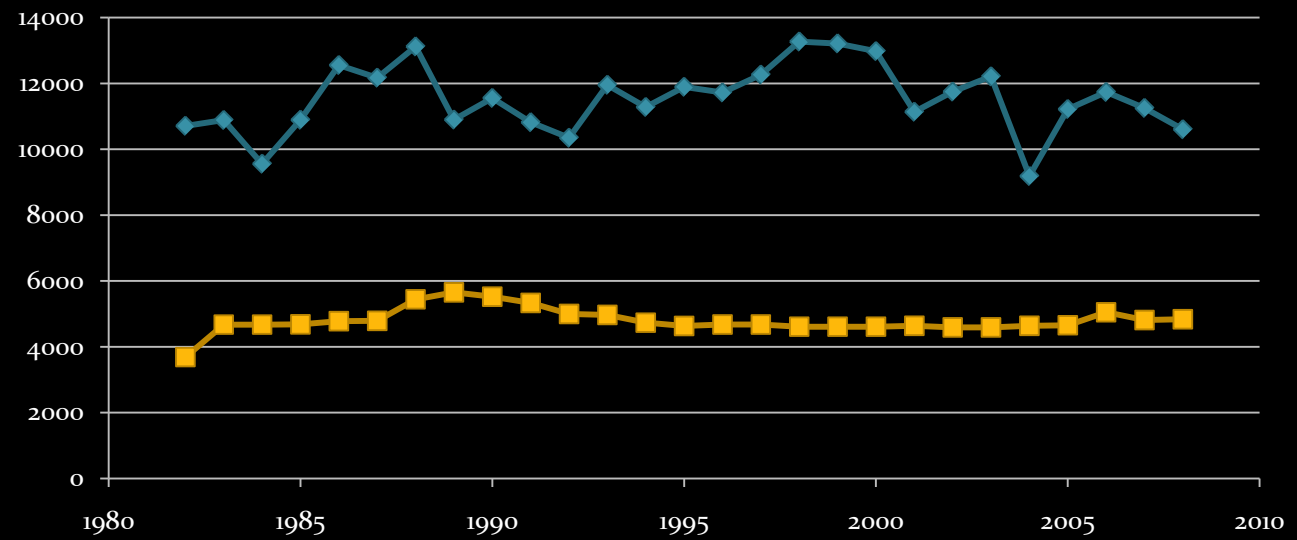
- THRESHOLD/PULSED EXPLOITATION STRATEGY
- CONSTANT YIELD STRATEGY
- TRACKING STRATEGY
- CONSTANT EFFORT STRATEGY

- TRACKING – opportunities vary as population size changes
 - HIGH AND FREQUENT DATA NEEDS
 - e.g. Survival rates , population estimates , kill
 - INTENSIVE MANAGEMENT INPUT
 - ANNUAL REGS CHANGES
 - DETAILED ANALYSIS

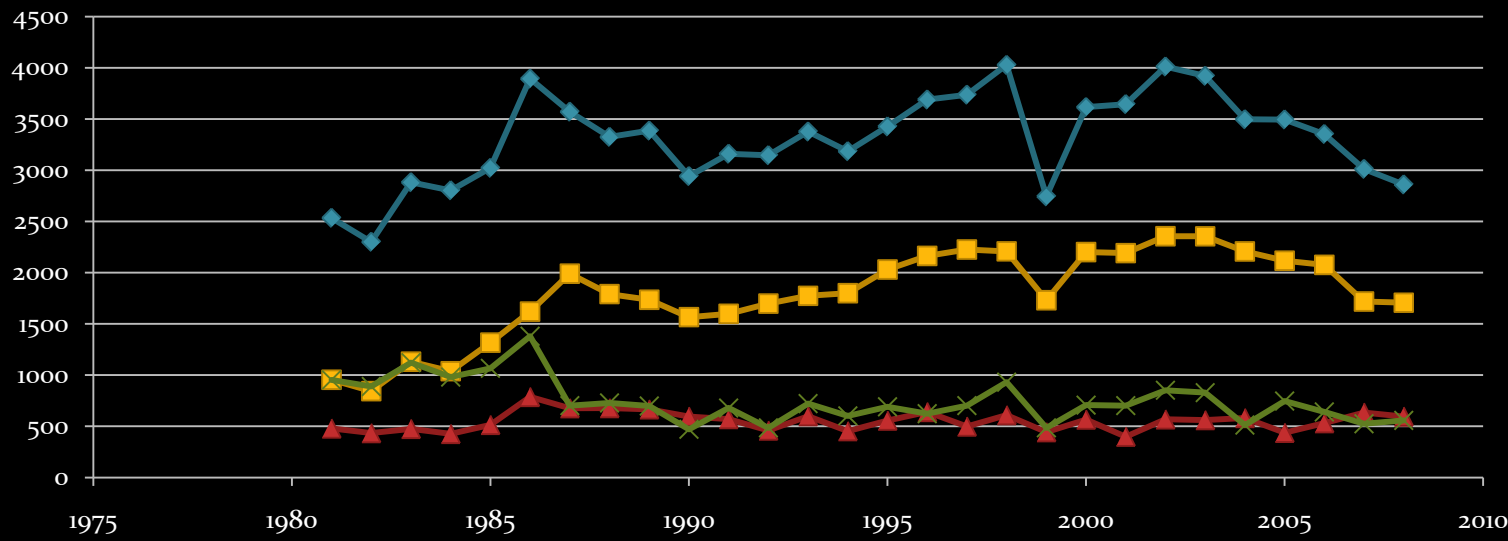
● CONSTANT EFFORT

- Meets objectives for yield and consistency
- FEW DATA NEEDS –
 - e.g. do not need to know kill by Aboriginal hunters, population size or carrying capacity
- ONE KEY ASSUMPTION – hunter efficiency does not increase and no major adverse environmental changes
 - Large changes should be obvious e.g. global climate change
 - The risk is that those changes are accounted for appropriately

CONSTANT EFFORT



SUSTAINED KILL



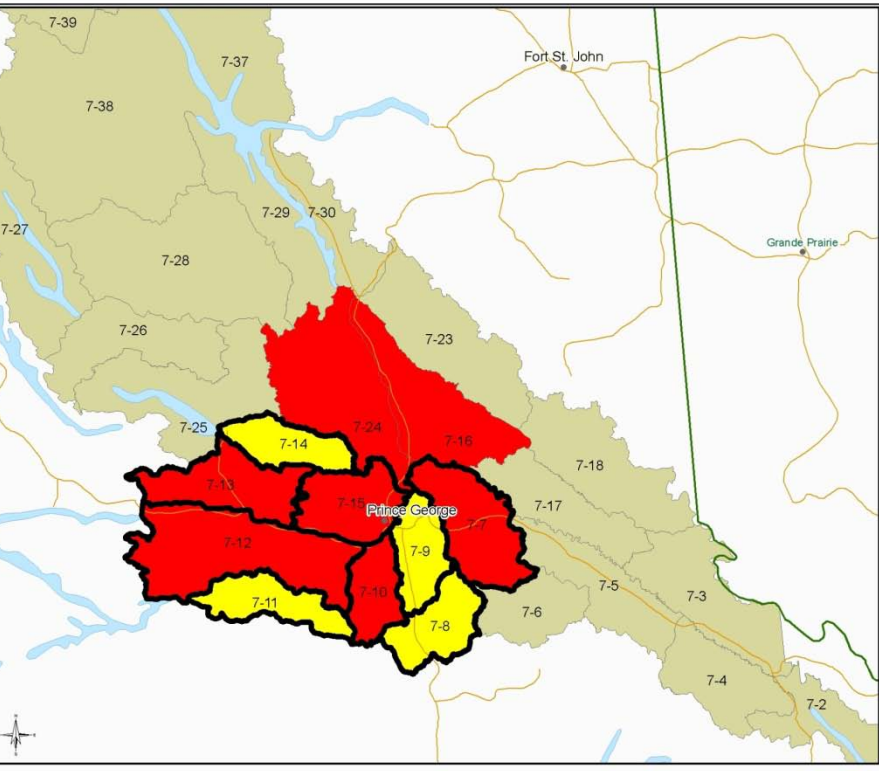
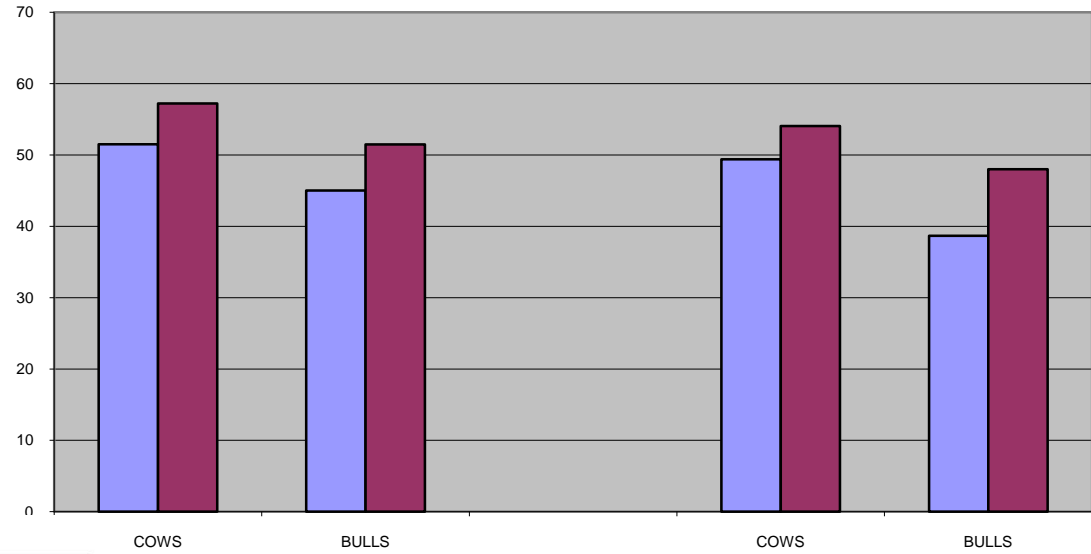
WHAT ABOUT A DIFFERENT CONSTANT EFFORT?

- E.g., ELIMINATING LEH COW SEASON

EFFECT OF REDUCING COW LEH

- 1986-1997 LATE COW SEASON
- 1998 – 2006 LATE SEASON ELIMINATED
 - 33% FEWER COW PERMITS

CHANGE IN
HUNTER
SUCCESS
AFTER
ELIMINATING
33% OF THE
COW LEH
PERMITS



LATE SEASON
MUs

CONTROL
MUs

1986-1997
1998-2006

- ELIMINATING LEH COW SEASON COST

- Loose 1570 HUNTERS DIRECTLY
- 4000-5000 TOTAL

- BENEFIT

- SOME MORE BULLS BUT LESS THAN 1570
- HIGHER BULL HUNTING SUCCESS RATES

- WHAT is THE MANAGEMENT OBJECTIVE
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END

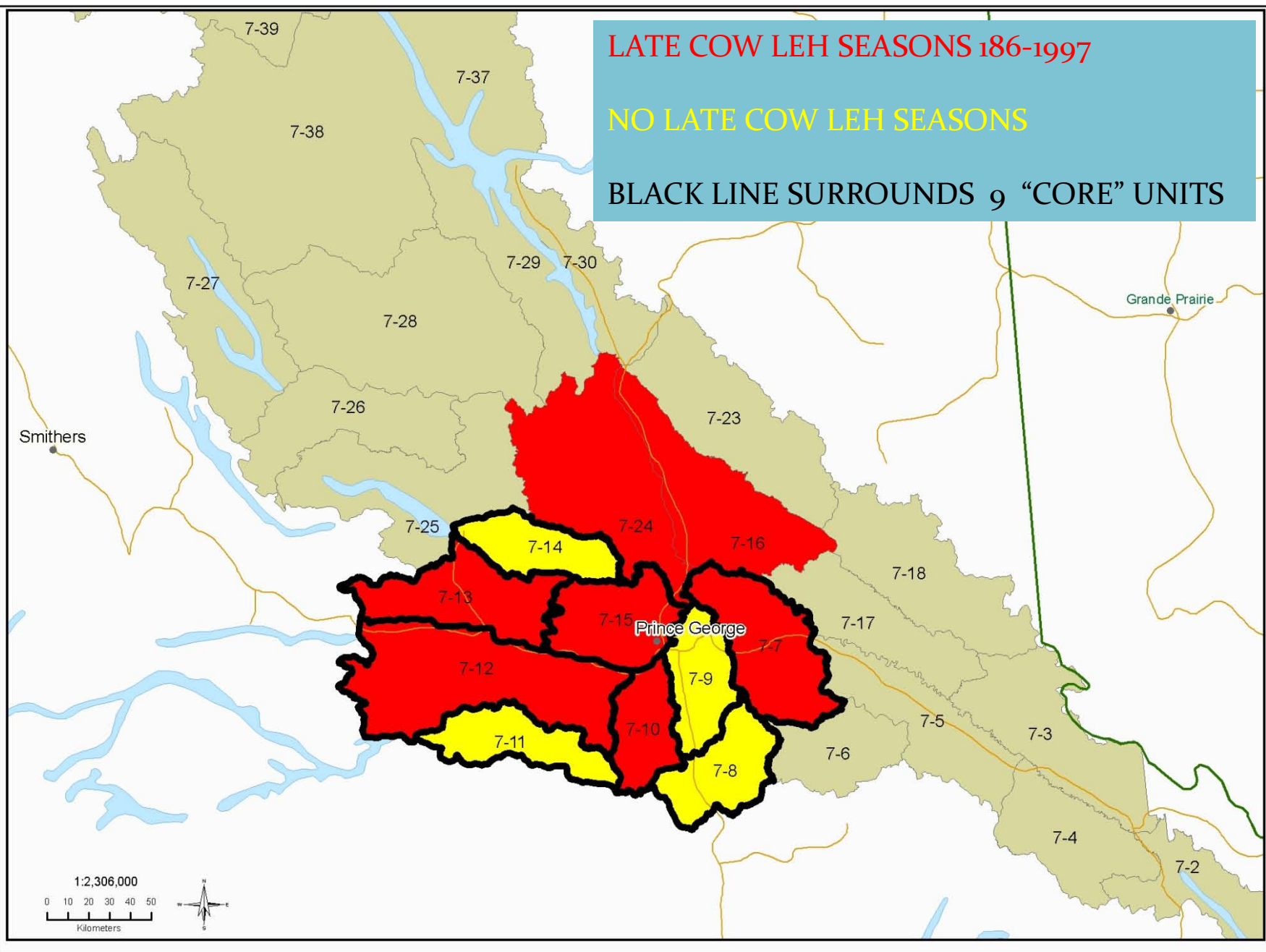
WHAT GOOD IS SCIENCE?

- Sets the ecological constraints [MSY/rmax]
- Informs decisions by predicting the consequences of actions thru observational tests and process modelling [reducing LEH cow permits]
- Suggests alternative management approaches [hunting all ages and both sexes]
- Prescribes learning processes [adaptive mgmt expts with replicates AND CONTROLS – evaluation of leh cow permit reduction]

LATE COW LEH SEASONS 186-1997

NO LATE COW LEH SEASONS

BLACK LINE SURROUNDS 9 "CORE" UNITS



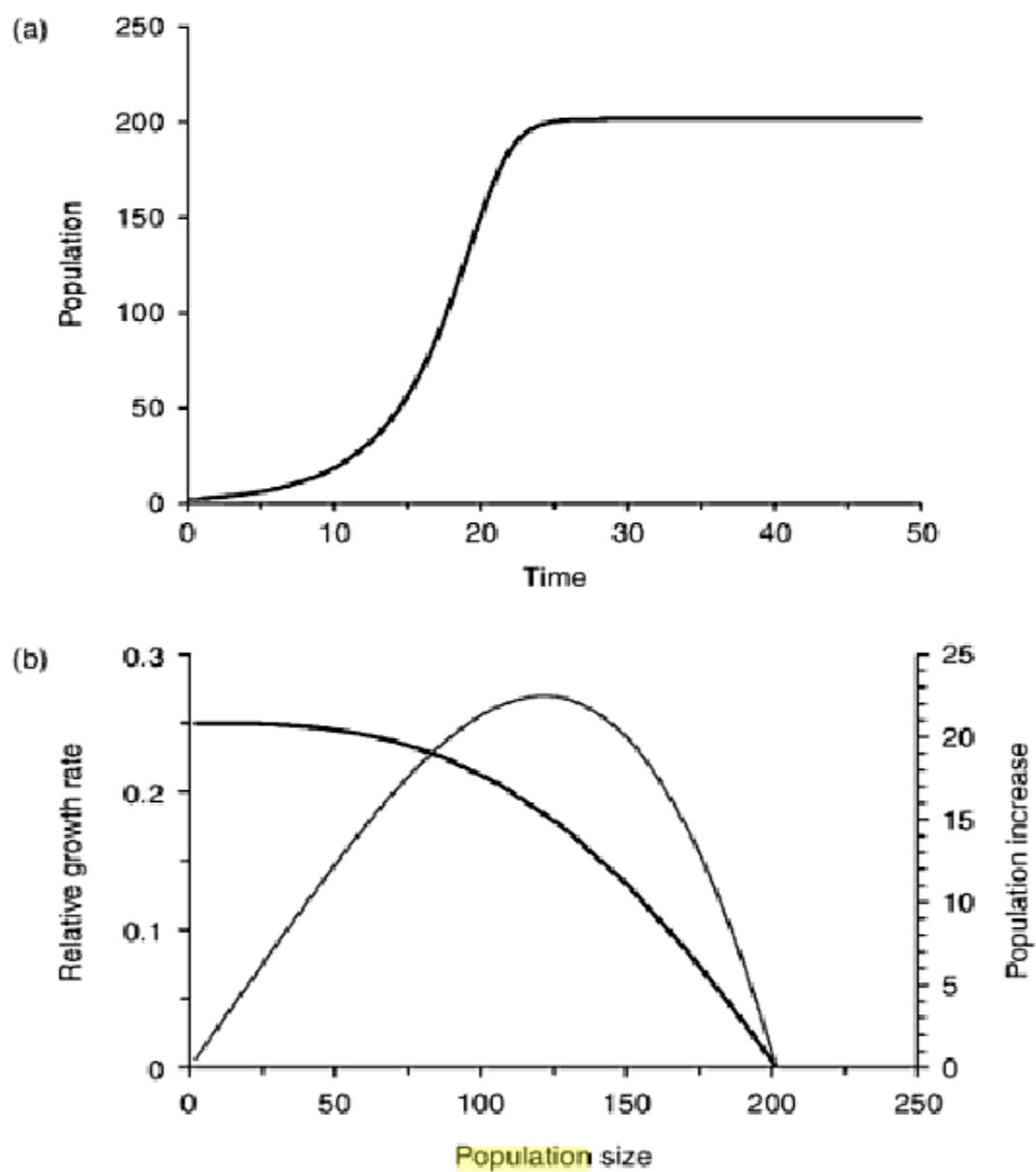


Figure 3.8 Generalized sigmoid model output with power coefficient $b = 3$ showing (a) change in population size over time and (b) relative population growth rate plus annual population increase against population size.

CONSTANT EFFORT PARADIGM

- No need to estimate K (so no disagreement with Gerry or Hatter or Gasaway)
 - Fewer data in general required
 - Can sustain high yields
 - Fewer process assumption
 - Easy to monitor big envir changes (global warming MPB road density... But needs process assumption)
 - – no change in environment letting CPE exceed MSY – monitoring helps reduce this risk
 - AAH is = history – it works but cannot say how another AAH will work without testing it.

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33% OF THE
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