
Greg Schneider

CLIMATE CHANGE ADAPTATION AND RUFFED GROUSE MANAGEMENT IN NORTHERN MICHIGAN

JOSEPH LAUTENBACH AND ERIC CLARK
INLAND FISH AND WILDLIFE DEPARTMENT
SAULT STE. MARIE TRIBE OF CHIPPEWA INDIANS

OUTLINE

Sault Ste. Marie Tribe of Chippewa Indians

Ruffed Grouse and Climate Change

Ruffed Grouse Management

OUTLINE

Sault Ste. Marie Tribe of Chippewa Indians

Ruffed Grouse and Climate Change

Ruffed Grouse Management

SAULT TRIBE

Largest Tribe east of the Mississippi with over 40,000 members

- License approximately 5,000 members to exercise treaty rights annually

Estimated harvest by Sault Tribe members exceeds 144,000 animals each year

- 55 wildlife and 36 fish species harvested annually

SAULT TRIBE

1836 Treaty Ceded Territory

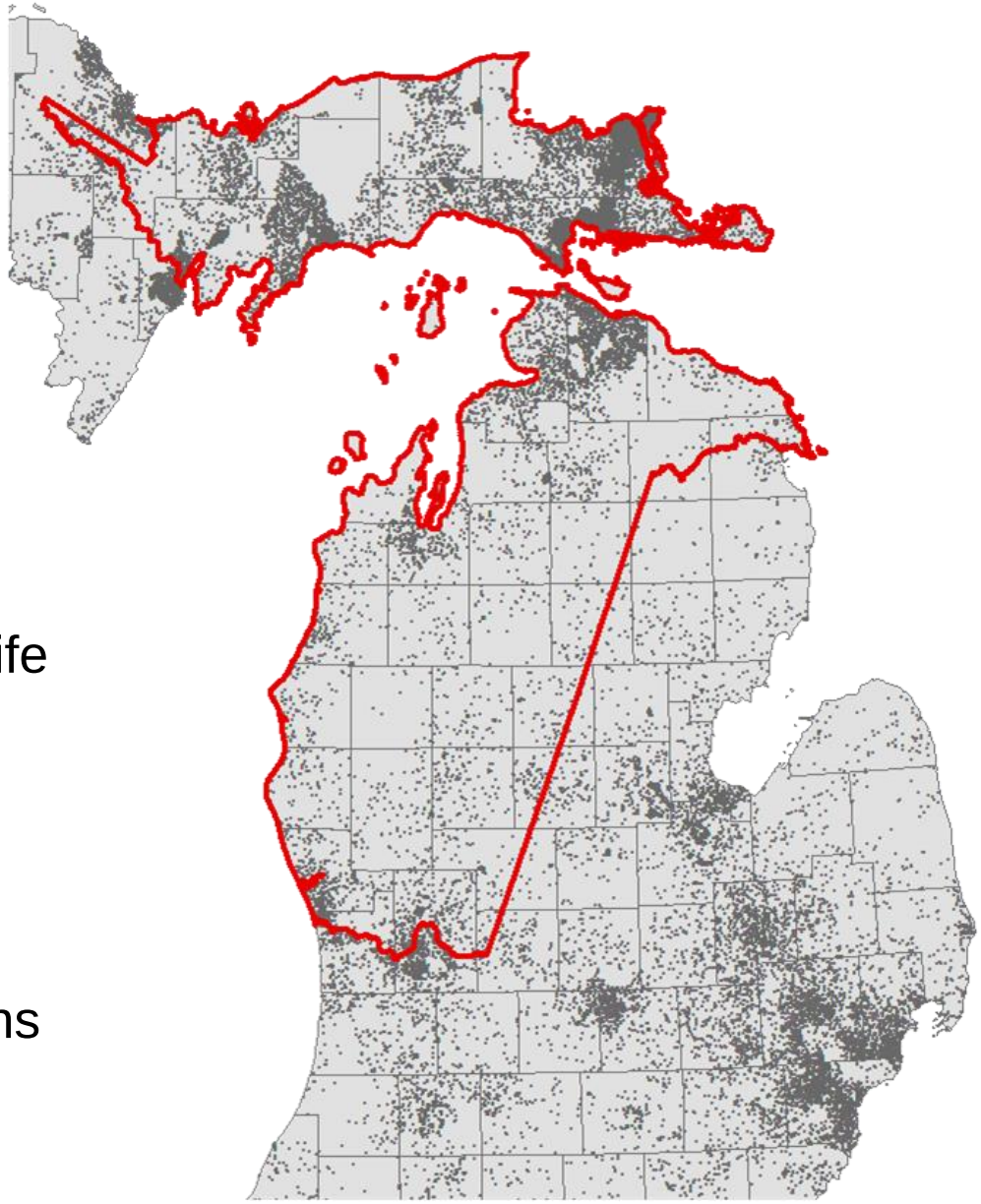
2007 Consent Decree

Rights to harvest fish and wildlife

Rights to manage wildlife

-Assessment work

-Management recommendations



Eric Clark

SAULT TRIBE

Ruffed Grouse (Bine) Harvest

Estimated annual participation:

- Ranges from 31 – 47% of license holders (approx. 1,500-2,500 hunters)

Estimated annual harvest:

- Ranges from 3,261 – 9,218 birds


Eric Clark

SAULT TRIBE

Ruffed grouse (Bine) culturally important

- Central role in many parts of the creation story
  - E.g., startling Nanabushu and assisting with the creation of lichens


Eric Clark

SAULT TRIBE

A loss of ruffed grouse in Michigan means:

- Loss of an important cultural species
- Loss of access to resources in the 1836 Ceded Territory
- Loss of an important source of annual subsistence harvest

OUTLINE

Sault Ste. Marie Tribe of Chippewa Indians

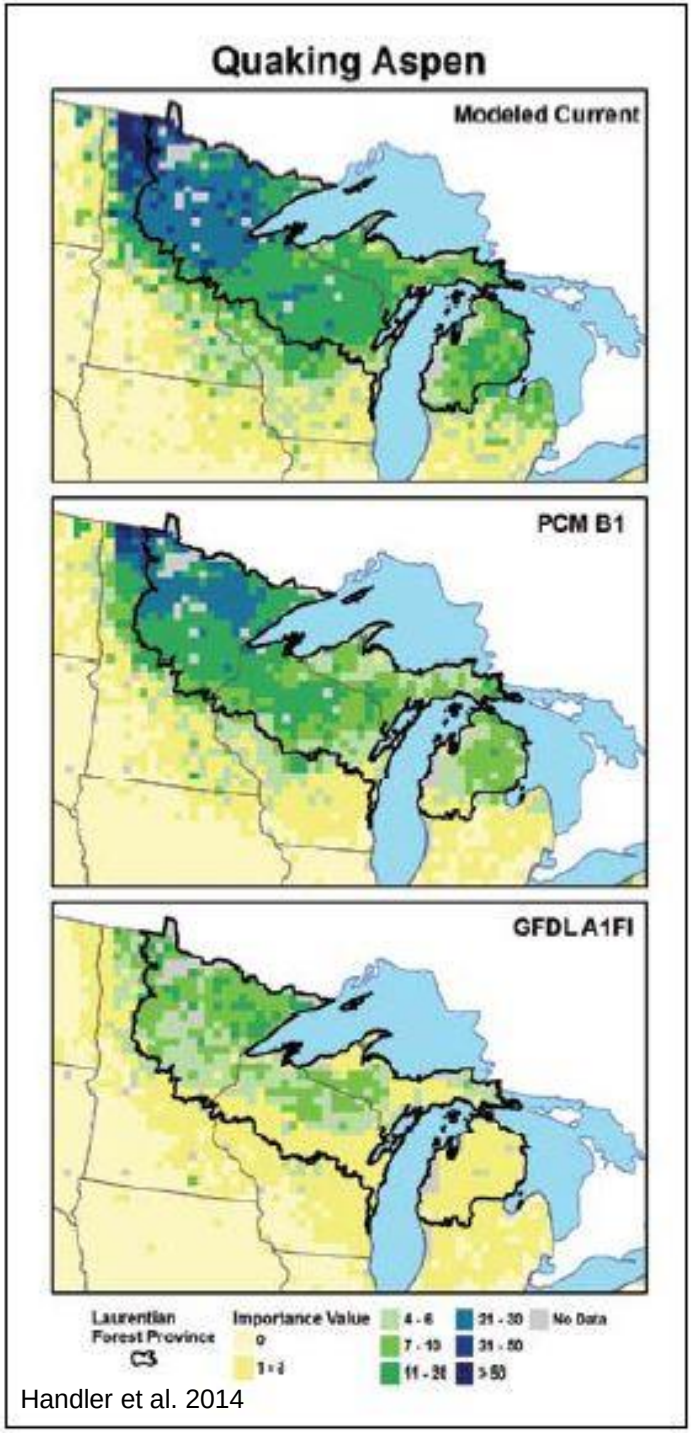
Ruffed Grouse and Climate Change

Ruffed Grouse Management

RUFFED GROUSE AND CLIMATE CHANGE

Ruffed grouse depend on aspen

Aspen forecast to decrease
(Worrall et al. 2013; Handler et al. 2014)



Handler et al. 2014

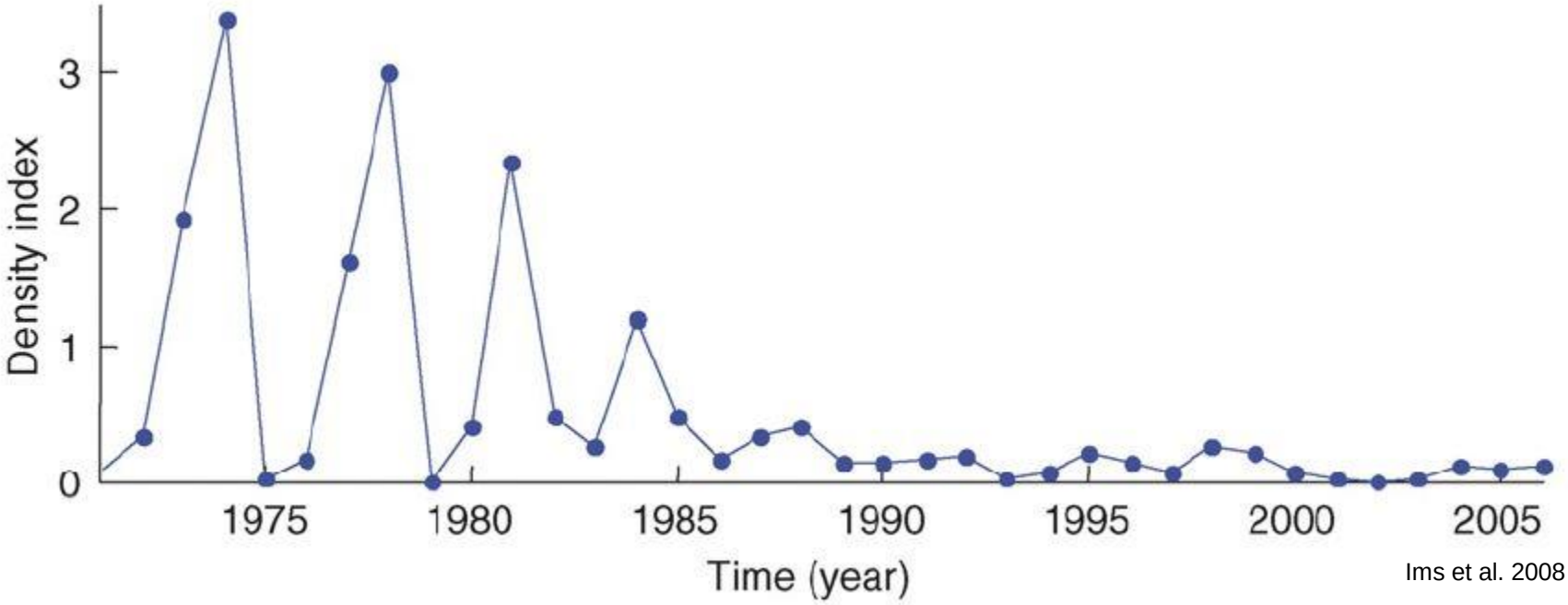
RUFFED GROUSE AND CLIMATE CHANGE

Ruffed grouse ranges shifting with climate change

- Population levels remain stable

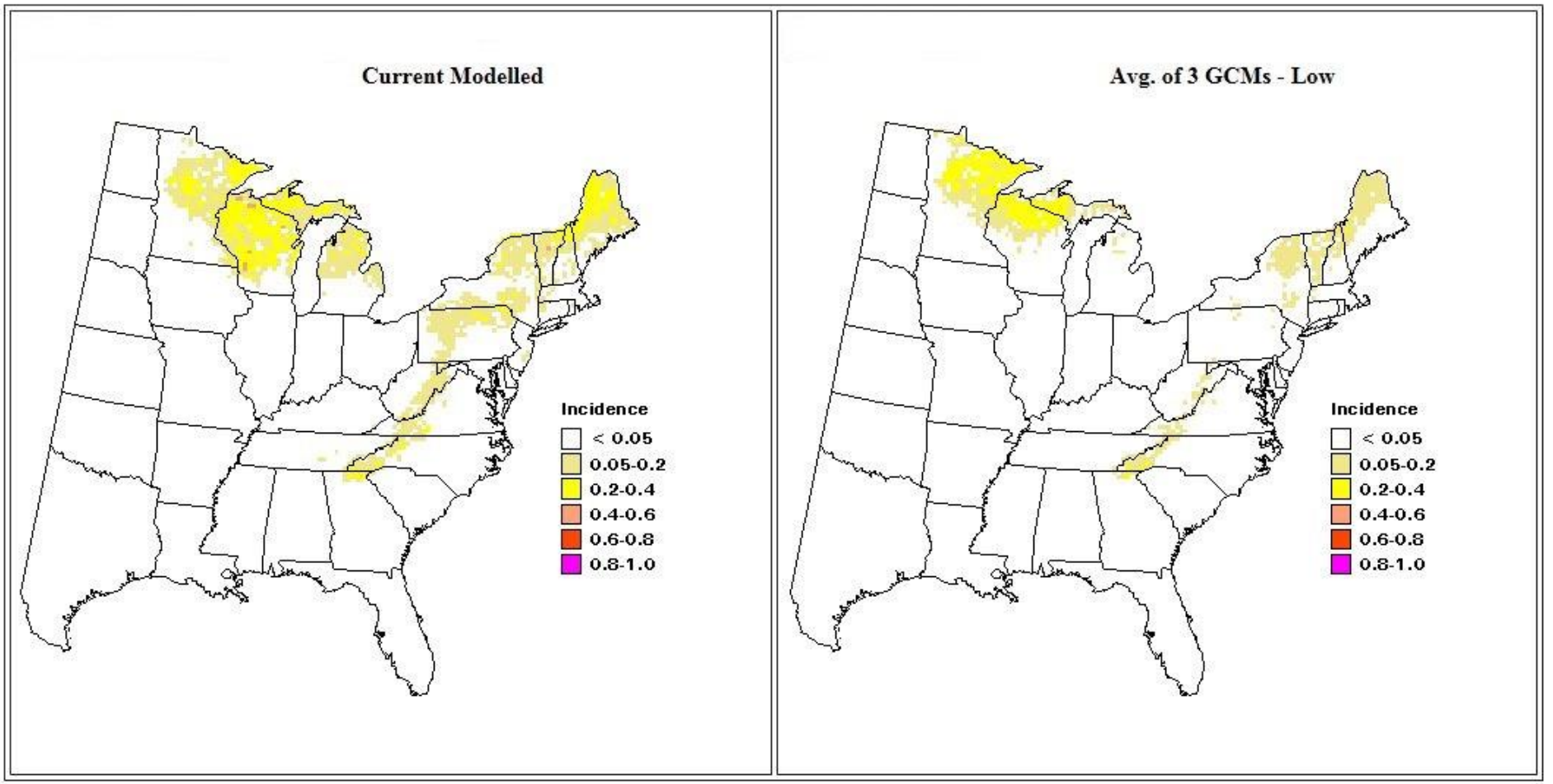
Climate change will dampen ruffed grouse cycles

- Lower, consistent population in Michigan



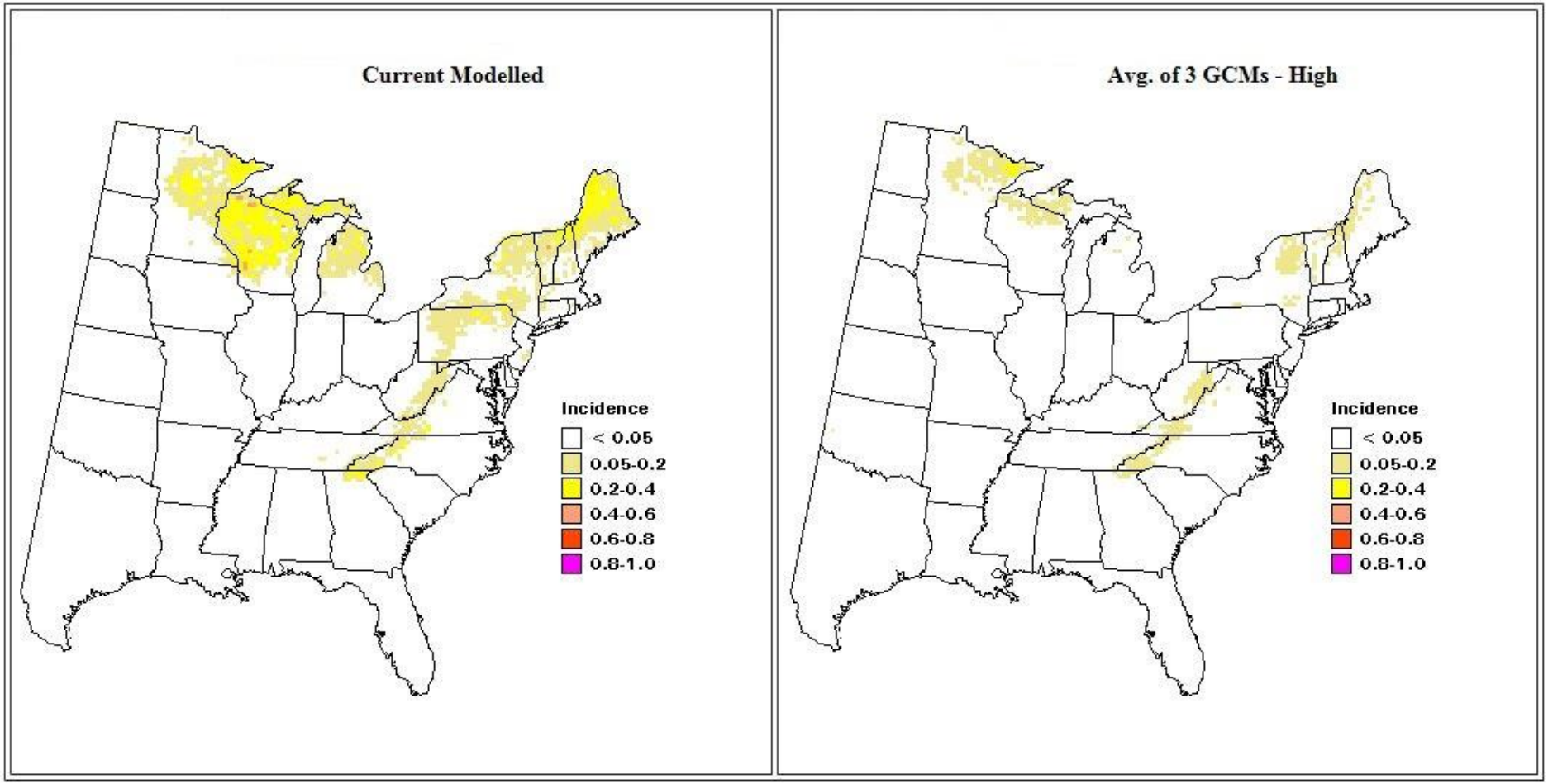
Ims et al. 2008

RUFFED GROUSE AND CLIMATE CHANGE



Matthews et al. 2007

RUFFED GROUSE AND CLIMATE CHANGE



Matthews et al. 2007

RUFFED GROUSE AND CLIMATE CHANGE

Most models focus only focus on climate

- What about land use change?
  - Fragmentation?
    - Population decreases
    - Reduces population movement

RUFFED GROUSE AND CLIMATE CHANGE

Most models focus on climate envelopes

- What about land use change?
  - Management?
    - Early-successional forest loss
    - Early-successional forest implementation

RUFFED GROUSE AND CLIMATE CHANGE

Aspen are very important, but what else?

- Northern hardwoods
- Oak-hickory forests
- Mixed conifer forests
- Mast species

OUTLINE

Sault Ste. Marie Tribe of Chippewa Indians

Ruffed Grouse and Climate Change

Ruffed Grouse Management

RUFFED GROUSE MANAGEMENT

How do we manage for ruffed grouse going forward?

- Do nothing
- Change management practices
  - Increase forest diversity
    - Age classes
    - Species composition
- Adaptive management
  - Monitoring and readjusting management

Robert Drozda

RUFFED GROUSE MANAGEMENT

Increasing forest stand diversity

- Retaining oaks
- Retaining soft mass species
  - Importance of mast increases in the absence of aspen
- Shelterwood and two-aged stands used by grouse in North Carolina
  - Could be beneficial for retaining mast producing trees


Wikimedia Commons

RUFFED GROUSE MANAGEMENT

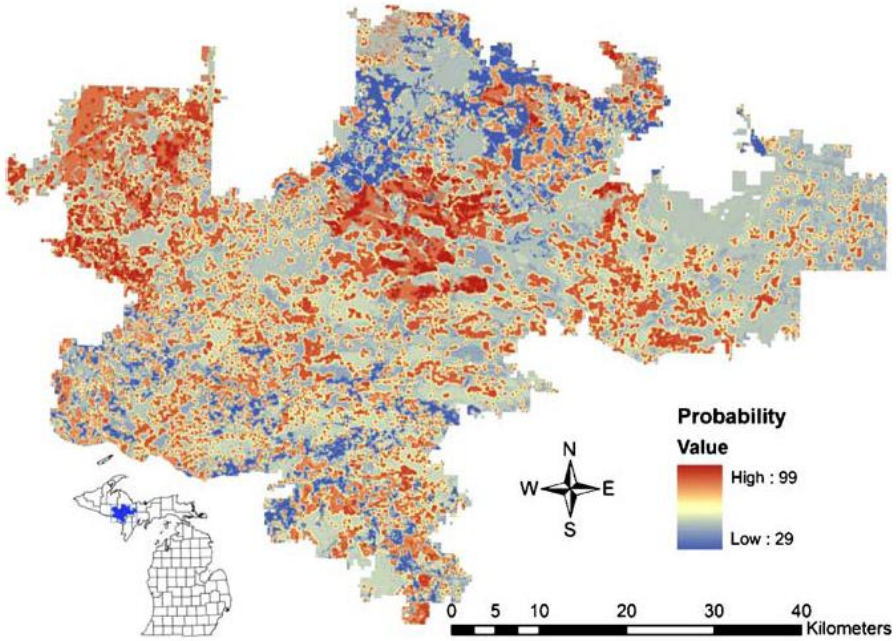
Clear cuts:

- All clearcuts are not the same:
  - Small clearcuts are more beneficial to ruffed grouse (Gullion 1977, Guillion 1984)
  - Small clearcuts could increase distribution of age classes

RUFFED GROUSE MANAGEMENT

Grouse management incorporates the landscape:

- All age classes need to be represented
- Manage across all land types
- For instance: All aspen isn't equal
  - Aspen on different land types is used differently
- Increases diversity
  - Climate change buffer



Felix-Locher & Campa 2010

RUFFED GROUSE MANAGEMENT

Sault Tribe is beginning to investigate the species-habitat-climate relationship

What suite of land types work the best?

Can we make landscape and stand level prescriptions?

RUFFED GROUSE MANAGEMENT

How does aspen gradient (0% - 100% cover) across land types affect ruffed grouse?

- Demographic rates
  - Adult survival
  - Reproductive output
- Space use/habitat selection

RUFFED GROUSE MANAGEMENT

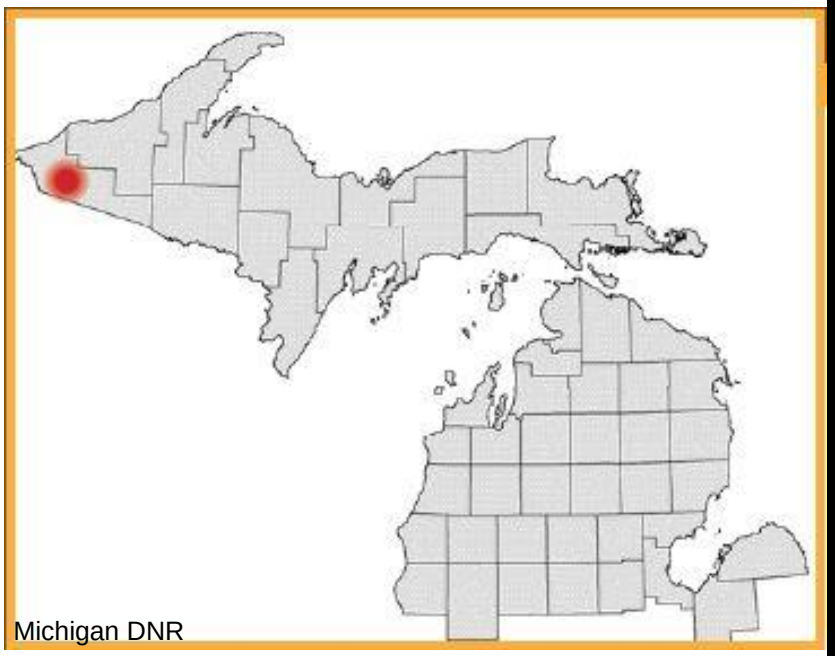
Monitoring ruffed grouse responses to management key to understanding the effects on population

- Drumming surveys
- Long-term monitoring

RUFFED GROUSE MANAGEMENT

What might this look like?

- Gogebic County GEMS site
  - Identified potential climate risks:
    - Potential for reduced soil moisture
    - Longer growing seasons
    - Species decline



RUFFED GROUSE MANAGEMENT

What might this look like?

- Gogebic County GEMS site
  - Increasing aspen age diversity
    - 5 age classes on 236 acres
  - Increasing native tree diversity
    - Retaining oaks, cedars, hemlocks, white pine, other under represented species
  - Remove more ash, possible decline

RUFFED GROUSE MANAGEMENT

What might this look like?

- Changes don’t have to be drastic
- Long-term planning involves small steps now
- Monitoring is key to evaluating ruffed grouse responses

THANK YOU!