Moose Health Research to serve Minnesota Tribal Communities

- Seth Moore, PhD
- Tiffany Wolf, DVM, PhD
- E.J. Isaac
- Yvette Ibrahim
What defines Grand Portage?
Ojibwe cultural perspective

• Seventh generation planning
  Great grand parent to great grand child
  Actions taken now must not hurt those ahead

• Oneness of nature and humanity

  Rights to hunt, fish, and gather, are also a right to non-toxic foods and waters
Ecosystem Health

“Ecosystem Health recognizes the inherent interdependence of the health of humans, animals and ecosystems and explores the perspectives, theories and methodologies emerging at the interface between ecological and health sciences.”
- Wilcox, 2004
Grand Portage Reservation Calf:Cow ratios 2000-2014

y = -0.0446x + 0.8497
R² = 0.2794
Subsistence Hunting and Natural Mortality of Adult Moose at a population of 3500 moose

- Natural Mortality: 525
- Subsistence Hunting: 40
Moose Population Decline

- Climate change
- Wild Fire frequency
- Habitat

Moose Population Decline
Warm winters + Long growing seasons, + Early snow melt = Climate change

Warm winters → Long growing seasons, → Early snow melt → Brainworm and liver fluke + Scavenging and predation + Hairloss and hypothermia =
MN Tribal Moose Studies

Moose
- 145 total moose captures
- 95 adult individuals
- 36 calves collared
- 33 adult mortalities
- 47 calf mortalities investigated
- 27 active adult collars
- 25 adult captures planned 2021

Deer
- 63 whitetail deer collared
- 20 active collars

Wolves
- 105 Wolf captures (avg. 8.5/yr)
- Five packs
- Four donated to ISRO

Funding and infrastructure
- 100% grant funded
- $3-5 million in wildlife research
- $1.3M in agency infrastructure
- 5 FTE, 4 grad students, 4 post docs, 1 part-time UMN researcher
- 4 academic institutions (UMN, SUNY, MTU, Lakehead University)
Mortality Investigations
Brainworm transmission
Moose Calf Mortalities 2013-2018 (n=73)

- Open: 30%
- Wolf: 29%
- Bear: 22%
- Unknown predation: 6%
- Orphaned: 4%
- Stillborn: 1%
- Hunter-killed: 1%
- Septicemia: 7%
Calf mortalities primarily a result of predation

• Next steps
  • Impacts of predator control
  • Sufficient to improve calf survival?
Bear Management

![Bar chart showing proportions of bear, unkPred, and wolf mortalities by year: 2013 (n=5), 2014 (n=6), 2015 (n=17), 2016 (n=9), 2017 (n=1), 2018 (n=4).]
Subsistence hunting mortality and other causes of mortality in a moose population of 3500

- Brainworm: 84 (50%)
- Winter Ticks: 105 (30%)
- Other Health issues: 131.25 (30%)
- Wolves: 40 (25%)
- Subsistence Hunting: 157.5 (25%)
Management to date

• New habitat creation
• Deer harvest increases
• Spring bear hunt

Recommended management

• Significant habitat creation
• Reduce deer density (need 25% reduction in infection rate)
• Spring bear hunt/possible wolf management
• Wolf delisting – sovereignty issue