Plants, Moose and Hunters: A case study in the Hajdukovich Creek Burn
Background

- Moose populations increase after wildfires on the Kenai Peninsula (Schwartz and Franzmann 1989, Peek 2007)
- Moose preferentially select burns over areas outside of burn. (Neu 1974)
- Fire severity affects proportional production and removal of aspen by moose. (Lord et al. 2008)
Background

- Moose constitute the largest non-fish subsistence resource in Interior, Alaska.
- Burns may not necessarily result in increased hunter success.
  - Access
  - Sightability
Question 1:
How have browse production and browse removal rates changed in the Hajdukovich Creek Burn since time of fire (1994)?
Hajdukovich Creek Burn
Methods

• Browse assessment survey: (Seaton et al. 2002)
  • % dead
  • Architectural class
  • Diameters of current annual growth and point of browsing
• Estimate biomass of forage production and removal.
Results: Browse Production

![Bar chart showing browse production kg/ha for high, medium, and low fire severity in 2007 and 2013.](chart.png)

- **High Fire Severity**
  - 2007: Approximately 250 kg/ha
  - 2013: Approximately 190 kg/ha

- **Medium Fire Severity**
  - 2007: Approximately 120 kg/ha
  - 2013: Approximately 40 kg/ha

- **Low Fire Severity**
  - 2007: Approximately 70 kg/ha
  - 2013: Approximately 70 kg/ha
Results: Browse Removal

![Bar chart showing browse removal kg/ha for different fire severities (High, Medium, Low) in 2007 and 2013. The chart displays the average browse removal with error bars indicating variability.]
Questions 2 & 3: Ongoing

- At the home range scale, how does the Haj Burn influence habitat selection of wintering moose compared to other landscape features?
- Within the Haj Burn, does fire severity of habitat patches affect moose habitat selection?
Methods

• 26 bull moose radio collared with Telonyx GPS collars.
  - Within burn (n=15)
  - Outside of burn (n=11)

• Location fix rate transmitted every 2 hours.

• Activity data measured with three-axis accelerometer.
  - active seconds/minute
Methods

Habitat Selection Modeling:
- Resource Selection Functions
- Brownian Bridge Movement Models

Habitat Variables:
- Burn Variables
  - Fire Severity
  - Distance to burn
- Wind
- Vegetation Class
- Temperature
- % Cover
Question 4:

- Does regenerating moose habitat in the burn translate to increased hunter harvest rates? How does hunter access affect these rates?
Methods: Harvest Rates

  - SW 20 D
  - NE 20 D

- Both units have experienced wildfire and have varying levels of access into the burn.
Methods

- Used statewide infrastructure layer and 2 km buffer.
- Intersected this buffered area w/ fires layer to produce a map of burned areas accessible to hunters.
- Calculated accessible area burned for SW GMU 20D and NE 20D.
Results:

- SW20D, 48,141 ha burned of which, 11,675 ha accessible to hunters.

- NE GMU 20D approximately 93,885 ha burned, however, <100 ha are accessible to hunters.

- The Hajdukovich Creek Burn had approximately 8,900 ha burn of which 6,004 ha of total burned area is accessible to hunters.
Results:

- **SW GMU 20D (good access into burns):**
  - 28% average success rate
  - 52% of the total number of hunters

- **NE GMU 20D (little access into burns):**
  - 36% average success rate
  - 5% of the total number of hunters

- **In a special permit area in Haj Burn:**
  - 74% average success rate (2007)
Management Implications

- Fire-related vegetation regeneration is an important habitat component for moose in this region.....however, forage production and removal rates are beginning to decline.
- GPS collar data will provide moose distribution and fine-scale movement models.
- In 2007, the Hajdukovich Creek Burn supported 74% of the total harvest in SW GMU 20.
- Several factors, including good access, may impact harvest rates.
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