FRI Grizzly Bear Program
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The Complexities of Grizzly Bear Ecology

Gordon Stenhouse – Foothills Research Institute
We want simple answers to complex questions:

\[ A = B \]
\[ A + B = C \]
\[ A + B + C = D \]

Etc.
A simple question but understanding animal response to environmental variables must be viewed in the context of the complexities of grizzly bear ecology.
The Complexity of the Question

1. Ecological Parameters — Grizzly Bears
2. Landscape Use and Human Activities
Ecological Parameters

We gather data from a sample of the population.

We must account for basic biological factors in our analysis including:

Age, sex and reproductive status

All these factors influence movement and behaviour.
Food tends to rule the movement patterns of grizzly bears.
Climate impacts and fluctuations
Ecological Parameters

Food is not simple - Omnivore
Ecological Parameters

Mating and Other Bears
Individual Behaviors
How to Evaluate Response?

1. Avoidance/Displacement

Well Sites

Facilities

Active/Inactive

Pipelines
Adult male (G266) Home range

Legend
- 2007 roads
- 2007 cutblocks
- 2007 wells
- 2007 pipelines

Kilometers
Adult male (G266) Home range

Legend
- 2007 roads
- 2007 cutblocks
- 2007 wells
- 2007 pipelines
- 2008 roads
- 2008 cutblocks
- 2008 wells
- 2008 pipelines
How to Evaluate Response?

1. Attraction / Avoidance
   – analysis Scales
How to Evaluate Response?

1. Measuring movement patterns and habitat use will be carried out, however...

2. We will also measure measures of health (Growth, survival, reproduction and stress)
Stepwise modeling building approach

**Observations**
- **Biology-Life History** (age, sex, density)
- **Regional Productivity Gradients** (climate, elevation)
- **Inter-annual variability in productivity** (birth year, etc)

**Final model**
- **Measures of Bear Response** (movements, health, etc)
- **Anthropogenic Change** (wellsites, cutblocks, etc)
- **Habitat Quality** (forest age, cc, regen)
**Preliminary Results — Grizzly Bears do not show avoidance of well site zones**

**Graphs:**
- **Females:**
  - Day vs. Night selection ratio in WSZ over months from May to October.
- **Females with cubs:**
  - Day vs. Night selection ratio in WSZ over months from May to October.
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