Facilitating ecological transformation on the Kenai Peninsula?

Doing nothing vs doing something

John Morton and Dawn Magness
Kenai National Wildlife Refuge
✓ Alaska is warming at 2X Lower 48 rate
✓ Climate change effects are not masked by other anthropogenic drivers
✓ Kenai Peninsula may be best studied locale in AK outside of high arctic
Kenai’s landscape has changed dramatically in last 50 years in response to warming and drying

- available water (60% loss since 1968)
- wetlands (6 – 11% per decade)
- glaciers (11% surface area, 21 m elevation)
+ treeline (10 m per decade, 2.8 m•y^{-1})
+ SB beetle outbreaks (triggered by 2 consecutive warm summers)

Official fire season is now April 1 instead of May 1.
Woody shrub encroachment into 8000 year old Spagnum peatlands

Berg et al. 2009
2 questions we need to ask ourselves....

What’s the risk of doing nothing?
What’s the risk of doing something wrong?

-----Rosa Meehan
10 Feb 2010
> 138 exotic species of flora (108) and fauna (30) occur on the Kenai Peninsula and are poised to fill novel assemblages
The trajectory we’re on:
Human-mediated system with an unknown outcome...
Doing nothing is really doing something...
just incoherently and haphazardly

- Kenai Peninsula is already responding to a changing climate and forecasted to continue doing so
- Latitudinal migration is constrained by the Kenai Peninsula’s isthmus and Kenai Mountains’ rainshadow
- Novel assemblages ≠ simple re-shuffling of native biota — many exotic species already introduced and more enroute
- Should we influence (steward) these outcomes?
DECREASING UNCERTAINTY BUT REDUCED OPPORTUNITY TO STEWARD THE OUTCOME

CURRENT TRAJECTORY

FOREST

LODGEPOLE PINE

BLACK-TAILED DEER

GRASS

PRESCRIBED FIRE

INTRODUCED GRAZERS

TIME
Constraints on moving forward...

- There is still some uncertainty about the ecological trajectory
- But...scientific uncertainty is NOT the deterrent to adaptation that many think
- Personal values of “-ologists” are constraining novel approaches
- Decisions are being made by agencies and private citizens...sometimes without climate change as context, but always without a comprehensive and coherent strategy
- We need more exploratory manipulative field studies
- We need to challenge existing policy constraints
Elements of resilience theory...

- We want systems to be self-organizing and self-sustaining
- Biodiversity is important as a way to hedge bets for future conditions
- Multiple possible ecosystem pathways and what’s available to colonize matters
- Catastrophic, nonlinear change will coincide with incremental changes
Questions????