



Beavers in Our Landscape: Understanding and living with beavers

Highlights

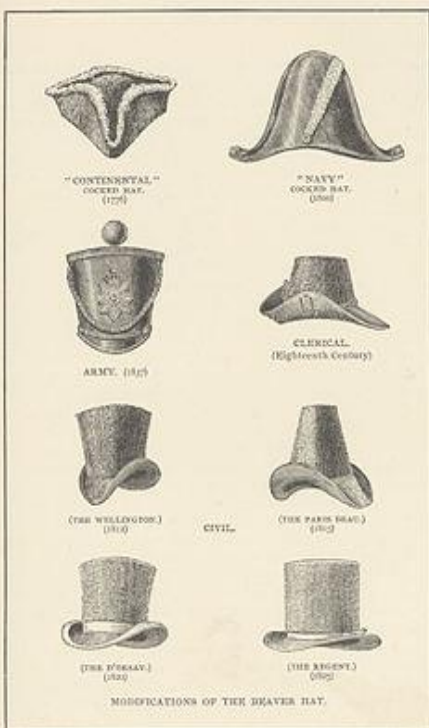
Presented by: Kerri O'Shaugnessy



Sept 30, 2017

ALMS

Lac La Biche



Castor canadensis- **Our home and native rodent**



A Canadian Icon

- 709 Canadian place names
- 50 Alberta place names



Where does a beaver like to live?

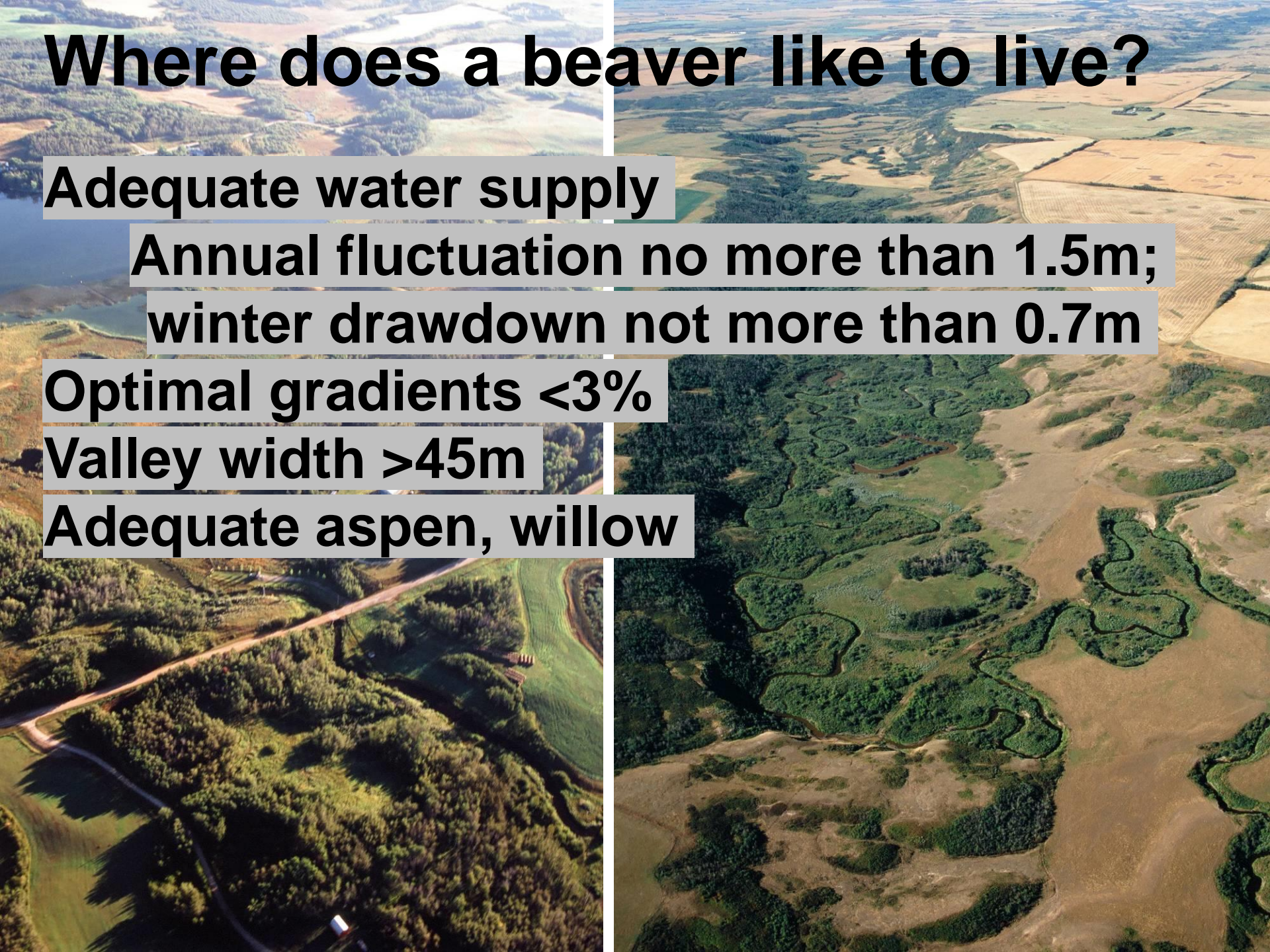
Adequate water supply


Annual fluctuation no more than 1.5m;
winter drawdown not more than 0.7m

Optimal gradients $<3\%$

Valley width $>45\text{m}$

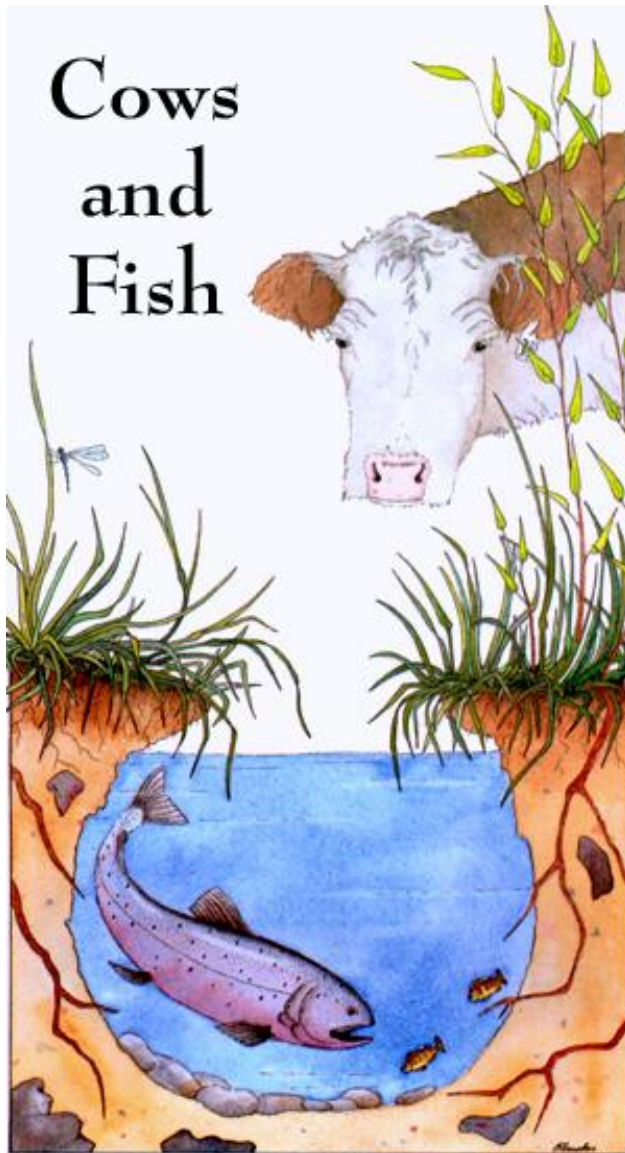
Adequate aspen, willow



The background is a watercolor-style illustration of a natural scene. At the top, a dragonfly with a blue body and transparent wings is shown in flight. Below it, a stream flows through a landscape with green grass and trees. The trees have stylized, wavy trunks and green foliage. The overall color palette is dominated by greens and blues, with a soft, painterly texture.

Building Riparian Foundations

Sediment captured by beaver ponds broadens stream valleys over time with rich deposits of soil to build diverse and productive riparian zones, wetlands, and meadows. Water tables become higher which creates and maintains a diverse mosaic of vegetation, particularly willows that protect and stabilize stream banks.

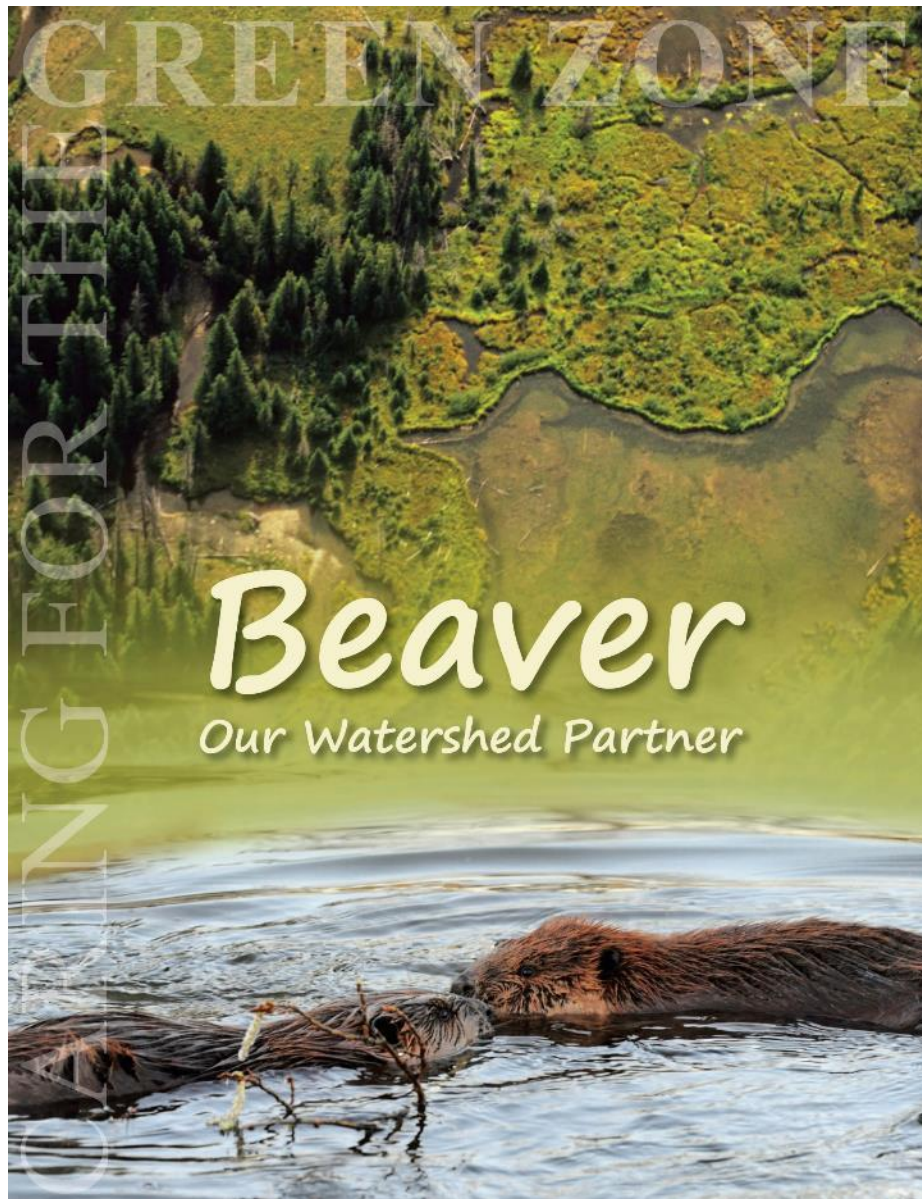


*“Working with
producers and
communities on
riparian awareness”*

Alberta Riparian Habitat Management Society

<http://cowsandfish.org/publications>

Booklet



Factsheet

An Overview of Beaver Management for Agricultural Producers

These natural dam builders and water engineers can be aggravating and helpful, costly and beneficial. It is a matter of where and when.

This beaver management decision matrix tool, developed for agricultural producers, provides a host of potential actions to respond to various concerns and opportunities that producers have, related to beavers on their land. Beavers can pose management challenges, but also offer many potential benefits to agricultural operations and to ecosystems.



Good Beaver, Bad Beaver?



FEAR THE BEAVER

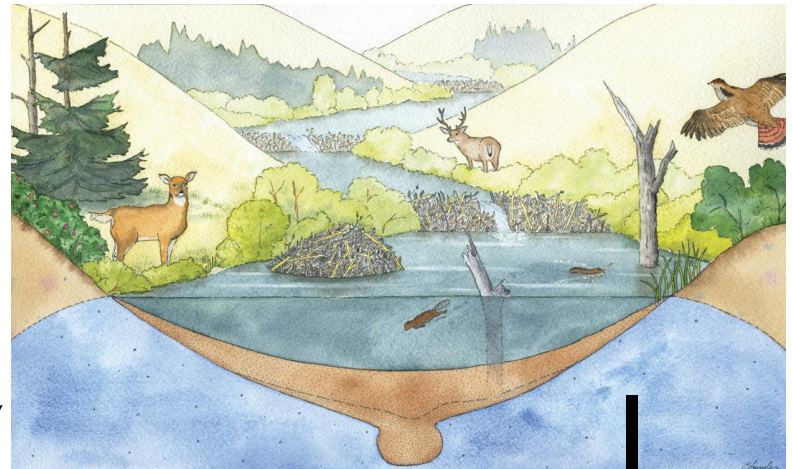


The March of Time in a Beaver-occupied Stream Valley

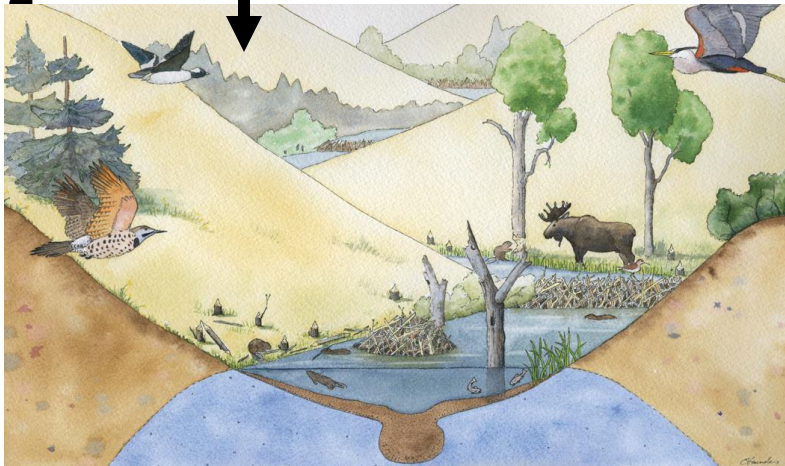
1



3



2



4



One year later



Stream bed raised 1.0 m

Near stream ground water increased 1.0 m



Basic Beaver Biology









Typical beaver colony:

- 2 adults**
- 2 young of the year**
- 2 two year olds**









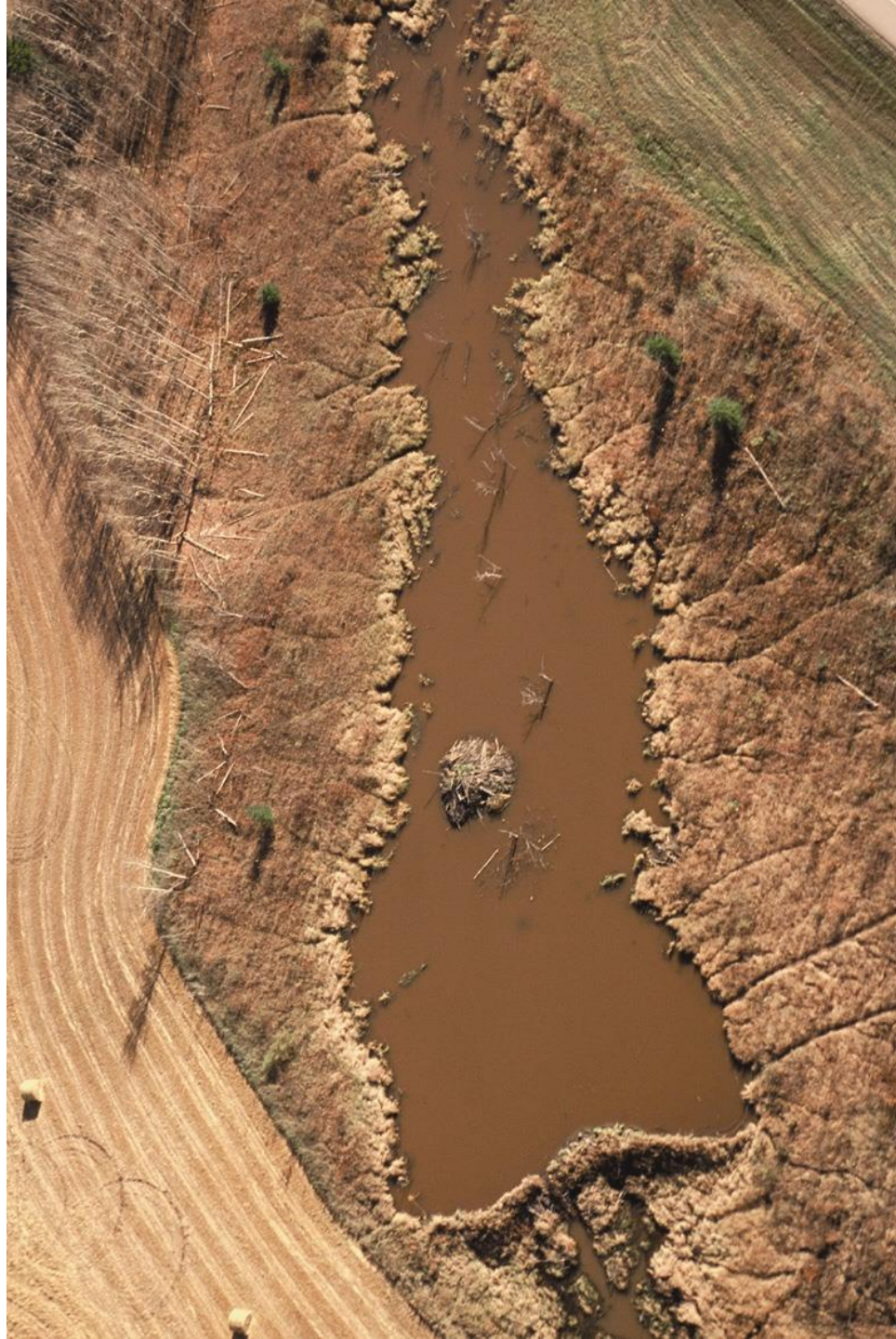


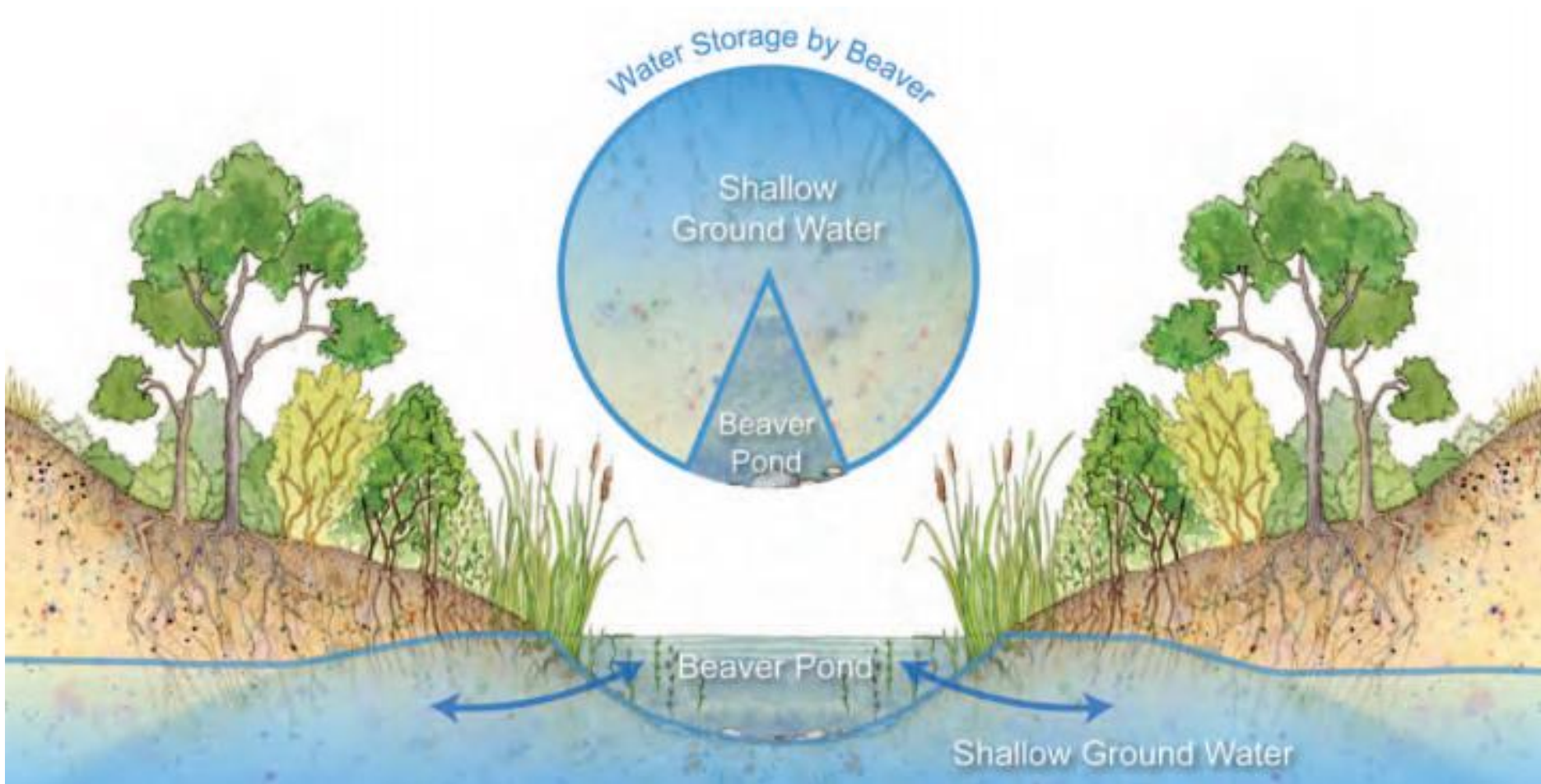
Chandler

Causes of beaver mortality









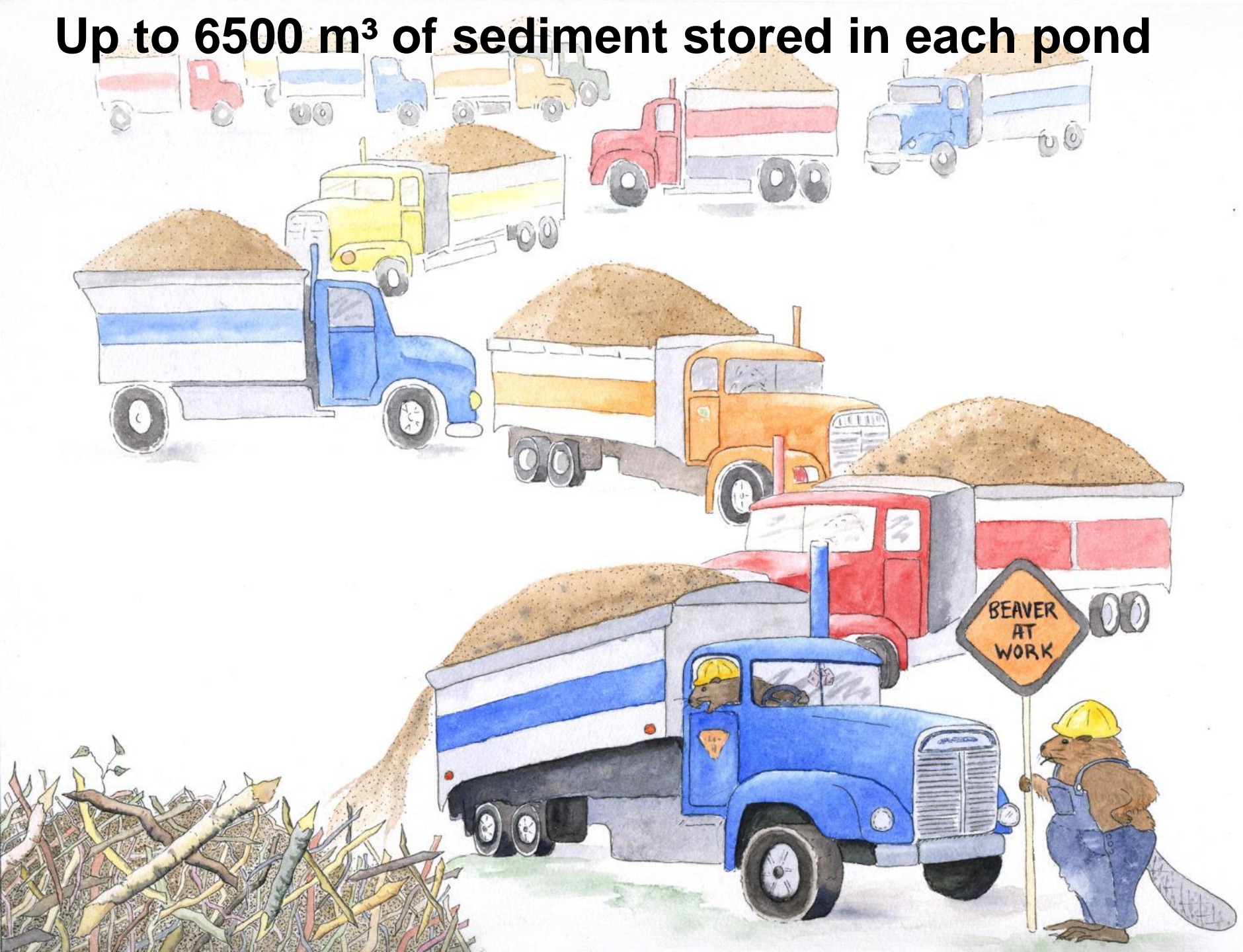
Retention-detention-storage-slow release

Beaver ponds:

- impound water**
- raise water tables**
- increase soil/water interface**
- increase duration of water contact**
- increase overbank flooding**
- increase time water spends in floodplain**
- network of dams, ponds, canals spreads water across valley**
- create habitat/riparian areas for fish, birds and other wildlife**



Up to 6500 m³ of sediment stored in each pond



Downstream of each pond:

- 50-75% less suspended solids**
- 20-60% less phosphorus**
- 20-25% less nitrogen (1000X of amount in riffles)**
- up to 23% carbon sequestered**
- reduced fecal coliforms**





Beaver Dams















Summary of Beaver Basics:

- 1. Modify channel geomorphology and hydrology**
- 2. Increase retention of sediment and organic material**
- 3. Create and maintain wetlands**
- 4. Modify nutrient cycling**
- 5. Modify and increase riparian zone**
- 6. Influence water quality downstream**
- 7. Modify habitat**

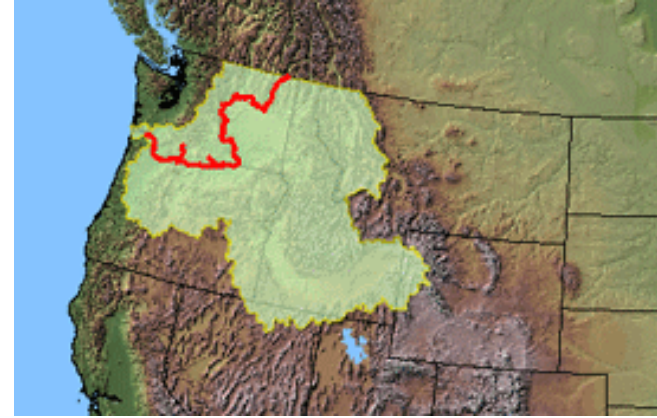


The Lands Council, Eastern Washington “Beaver Solution”



- **Background:** The 2006 Columbia River Basin Water Management Program (Bill 2860) calls for 3 million acre feet of added water storage to meet demand





– Phase 1 Results:

- Each beaver dam has potential to store 17.5 to 35 acre-feet of water
- 9,828 stream miles met physical criteria for beaver, 70% of which have sufficient vegetation
- Estimate that restoration would add 2.0 - 4.0 million ac/ft of water (surface and ground water)

Beavers change our landscape



Photo: Tony Blake
Red Deer River Naturalists



0carinaplaya.deviantart.com

ifunny.co

Beaver Challenges

- Flooding fields and property
- Blocked culverts, flooding roads
- Fence damage – downed trees, flooding
- Tunnels can be a hazard
- Chewing things other than trees
- Taking down trees
- Downstream water changes - wetter or drier







A beaver cuts 0.6- 1.0 aspen/day



**A colony would be supported by 1.0 acre of aspen
for 1-2.5 years**



Annual Diet - 53% wood

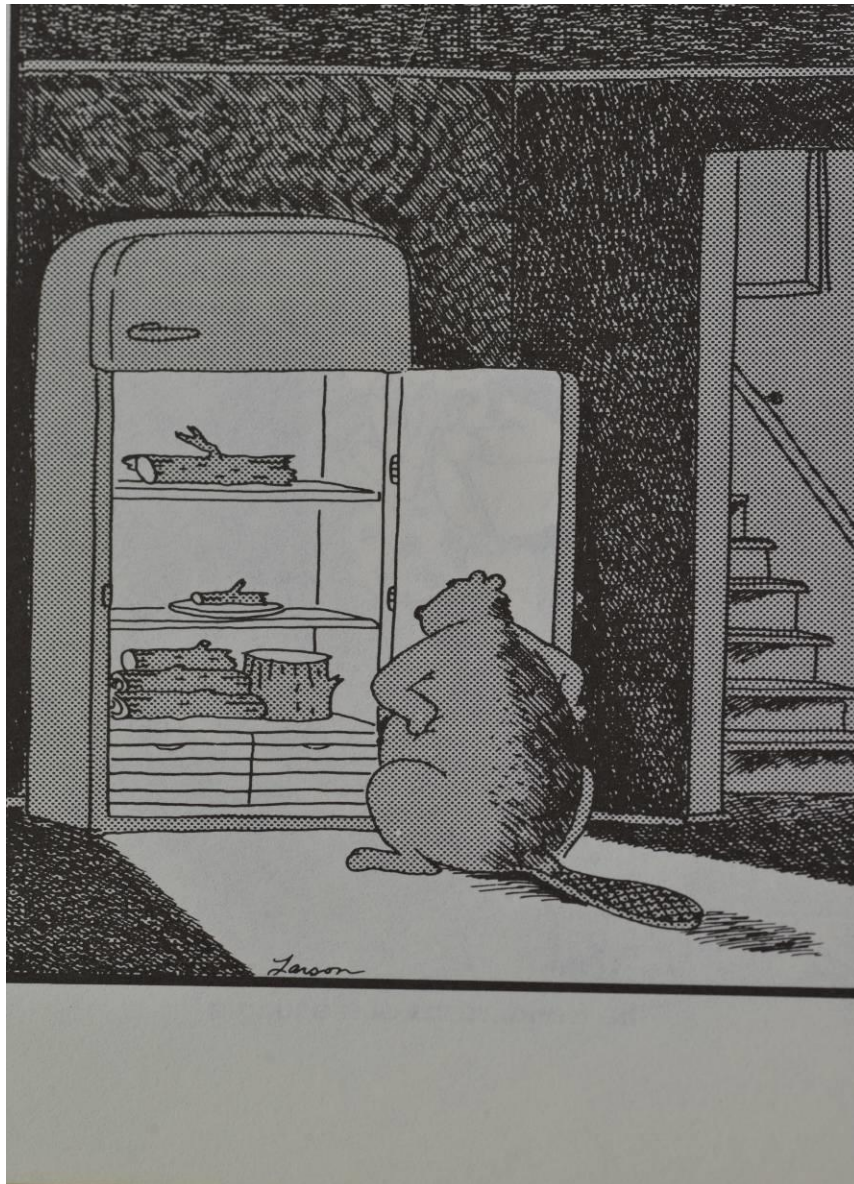
Seasonally:

Winter - 86%

Spring - 32%

Summer - 16%

Fall - 60%





Busy, busy beavers



"We were too busy."



"No, he's not busy ... In fact, that whole thing is just a myth."







Big Picture





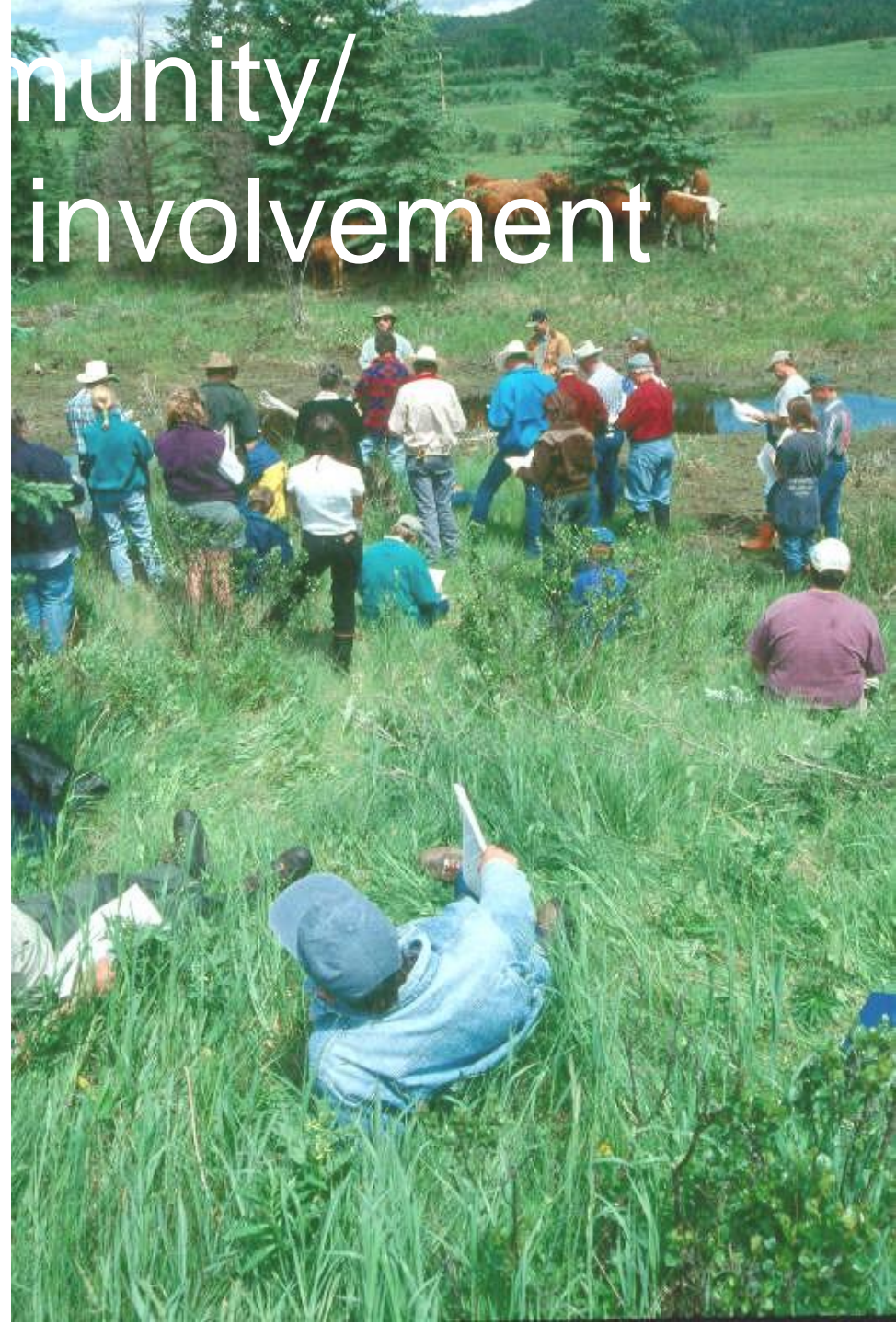
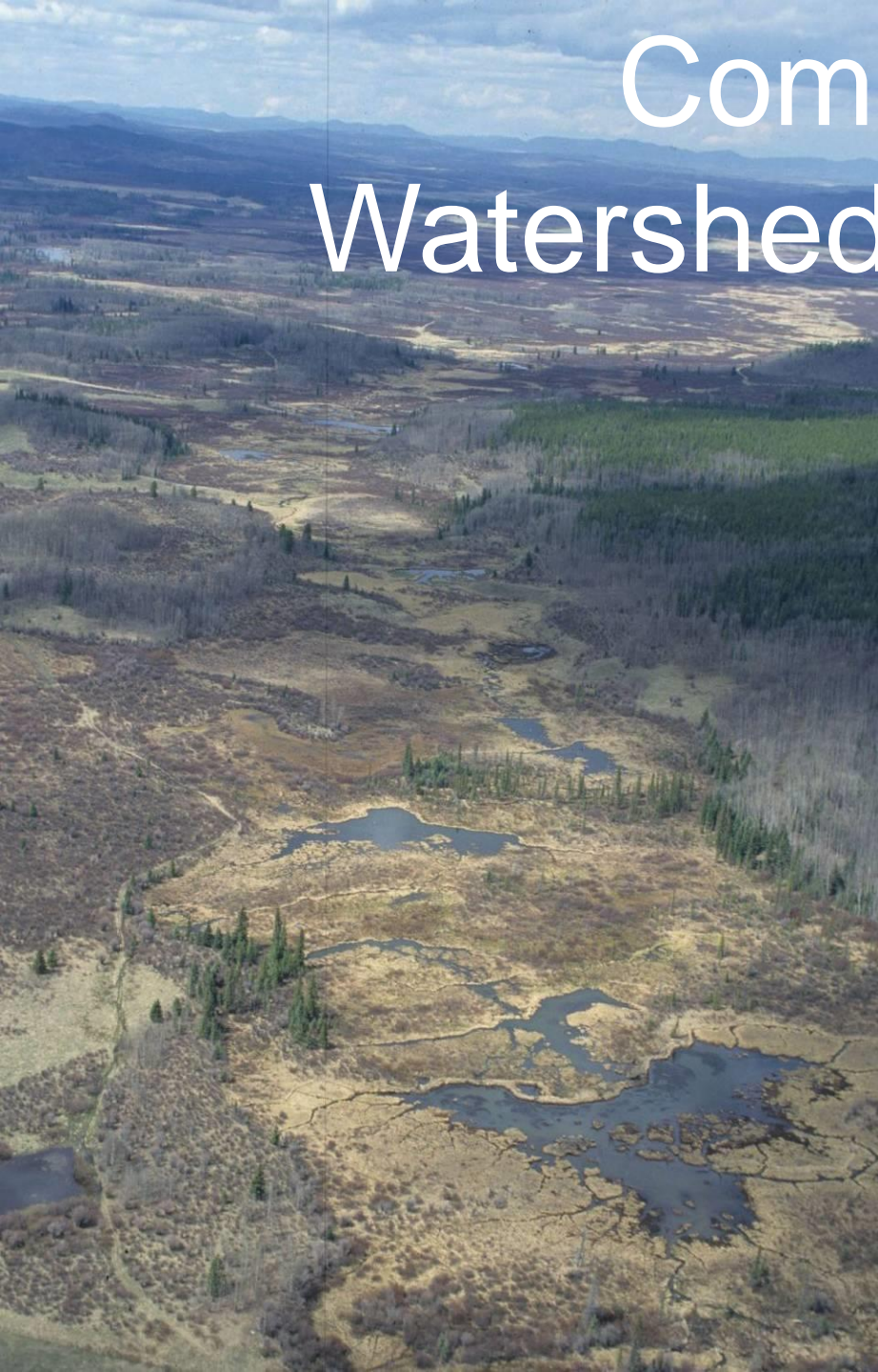
Where to for beavers?

- Increase tolerance for beaver/ Improve the beaver's image
- Awareness and outreach
- Tool development
- Community Approach-
From community efforts to a landscape scale
- Inventory of Suitable Habitat
- Beavers as a stream/riparian restoration tool
- Infrastructure planning
- Beaver "Hook Up" Service
- Policy Development
- Adaptation to climate change/ Increased variability

Beaver Management Strategies



Community/ Watershed involvement



Deterrents
Population management
Barriers
Repellents
Directing beaver
Habitat Management
Regulating water levels

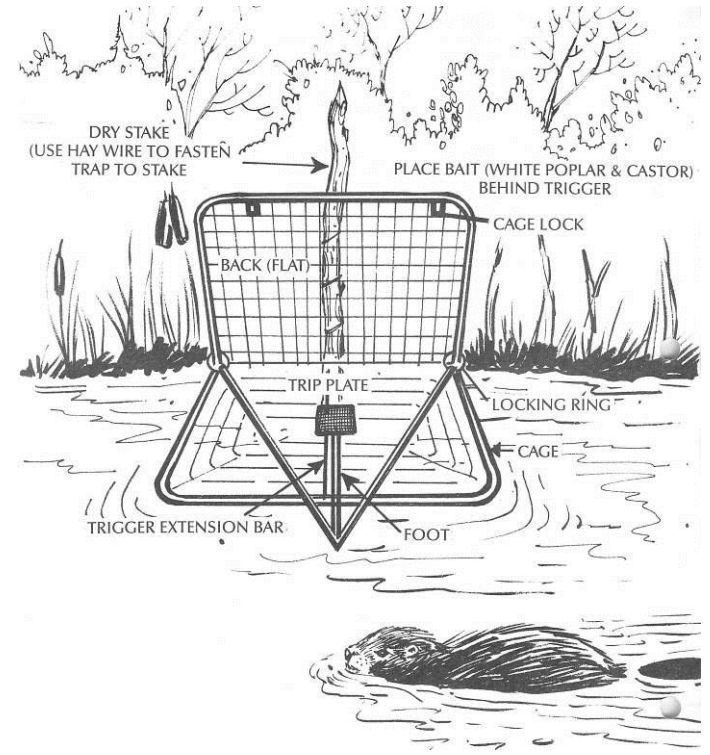


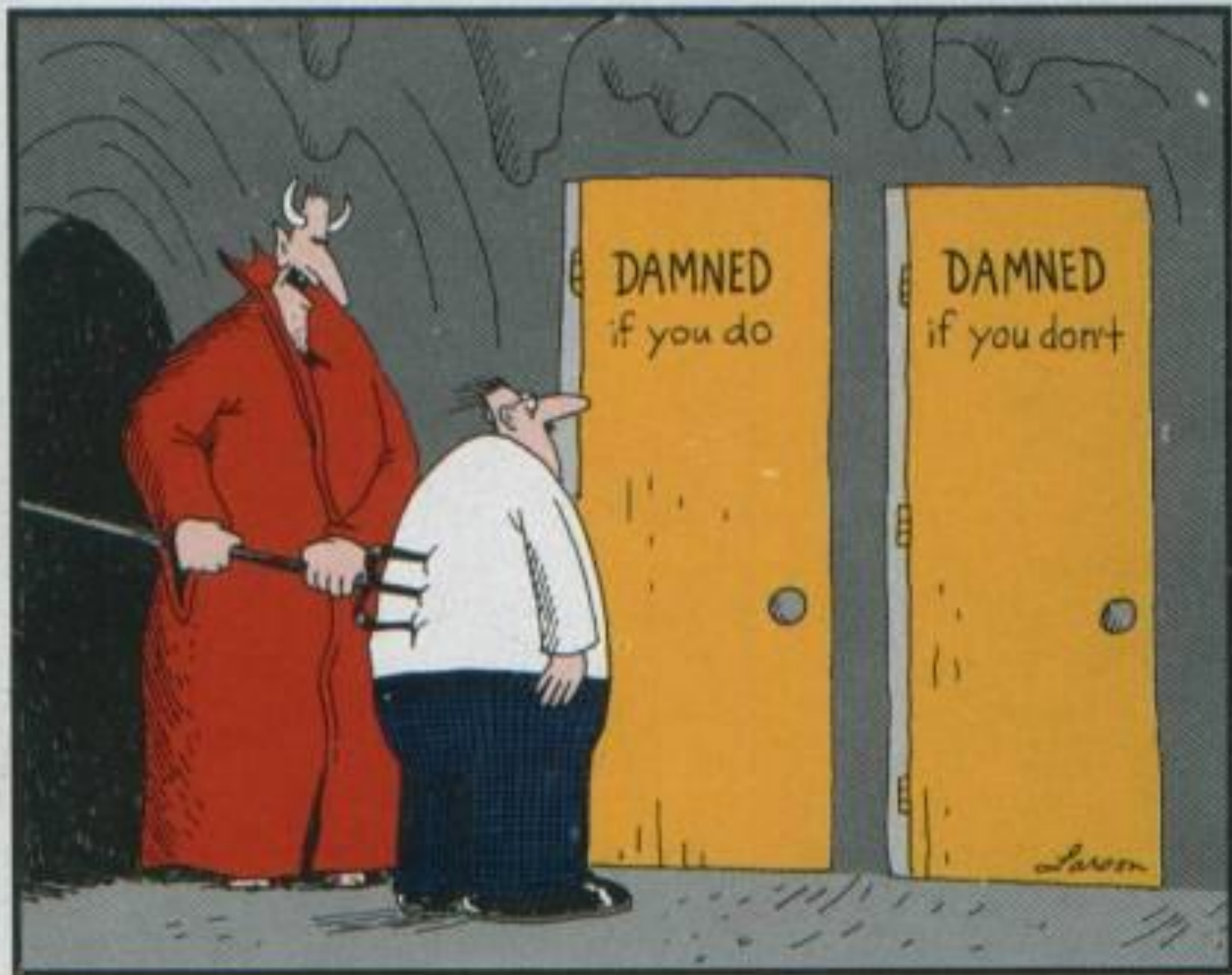
Deterrents



Population Management

Lethal and live trapping





"C'mon, c'mon — it's either one or the other."

Barriers





Barriers



MD of Foothills 2015



City of Calgary 2016



**Lac Ste. Anne
County 2017**



**Barrhead County
2017**



Habitat Management

Habitat Management



Repellents

- Scent markers
- Natural repellants
- Chemical repellants

Recipe

- 6 cups coarse sand
- Gallon indoor latex paint
- Mix & brush on tree trunks

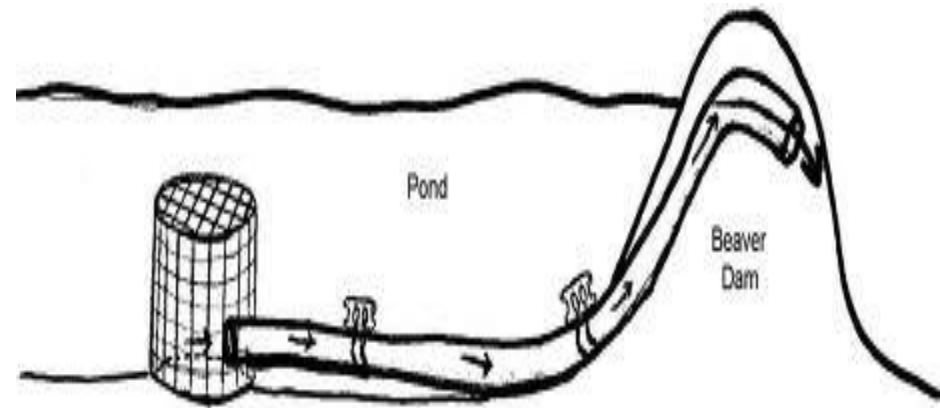


Directing beaver

- Audio cues
- Beaver occupancy zones
- Substitute food supply
- Infrastructure planning



<http://www.cbc.ca/beaverwhisperer/film.html>



Regulate Water Levels



Lac Ste. Anne County 2017

Before



After



M.D. of Foothills



Muriel Lake Basin North Creek 2017

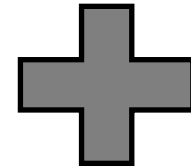


https://www.facebook.com/pg/Savemuriellake/photos/?tab=album&album_id=1461636587263746

Cost-Benefit Analysis



vs



- Dr. Manaloor, U. of Alberta: costs & benefits of traditional vs alternative management of 12 sites in Cooking Lake Blackfoot PRA, found they would save \$80,000 over 3 years





What else can you/we do?

- Continue to learn more (more in-depth workshop)
- Attend tours and train-the-trainer – build a community of practice
- Tracking health of demo sites through riparian health assessments, photos
- Continue to promote sound management practices
- Be a demo site



What else can you/we do?

- Visit a demo –
 - Starland County
 - County of Vermilion River
 - Beaver County
 - MD of Foothills
 - Smoky Lake County
 - City of Calgary
 - City of Red Deer

Motivation?



Flood



Drought

Acknowledgement of the role of beaver





Acknowledgements:

CONTENT: Lorne Fitch, Michael Gerrand, Cows and Fish staff, also see page 40-41 Beaver Our Watershed Partner booklet

IMAGERY:

- Myrna Pearman (Ellis Bird Farm), Rob Gardner (NCC), Shane Petry (AEP), Tony Blake (RDRN), Glenbow Archives, Cows and Fish, Beaver County





Beavers in Our Landscape: Understanding and living with beavers *UPCOMING WORKSHOPS*



Nov 8, 2017

County of Vermilion River

Nov TBA, 2017

County of Barrhead

Winter 2018

Brazeau County



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