

# Beaver Restoration Guidebook:

## A Practitioners Guide to Working with Beaver to Restore Streams, Wetlands and Floodplains

Available at USFWS website:

<http://www.fws.gov/oregonfwo/ToolsForLandowners/RiverScience/Beaver.asp>

Greg Lewallen -- University of Saskatchewan

Michael Pollock, Chris Jordan – NOAA Northwest Fisheries Sciences Center

Kent Woodruff – US Forest Service

Janine Castro – US Fish and Wildlife Service & NOAA Fisheries



# Application of the BRG in EPP 726

- Reference material for the course
  - Executive summary
  - Course outline
  - Information gaps, what's missing?
  - Version 2.0



## NPLCC Mission:

Promote development, coordination & dissemination of science

to inform landscape-level conservation & sustainable resource management

in the face of a changing climate and related stressors.

## NorthPacificLcc.org

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- Join our mailing list
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# Beaver Restoration Guidebook



## Broad Intended Audience

Regulators → Interested Public

## State of the Science

Beaver bib. > 1,400 References

## Access

USFW Website:

<http://www.fws.gov/oregonfwo/ToolsForLandowners/RiverScience/Beaver.asp>

# Beaver Restoration Guidebook



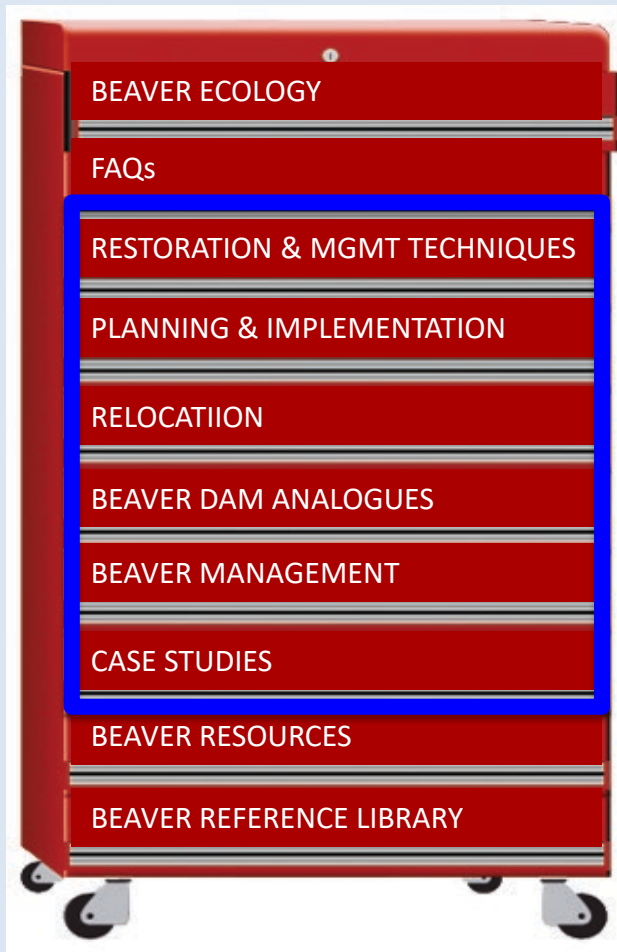
## Section 1 – Beaver Ecology

Ch.1- Effects of beaver dams

Ch.2- FAQs

Ch.3- Beaver myth busters

# Beaver Restoration Guidebook



## Section 2 – Restoration & MGMT

Ch. 4- Watershed planning

Ch. 5- Relocation

Ch. 6,7- BDAs

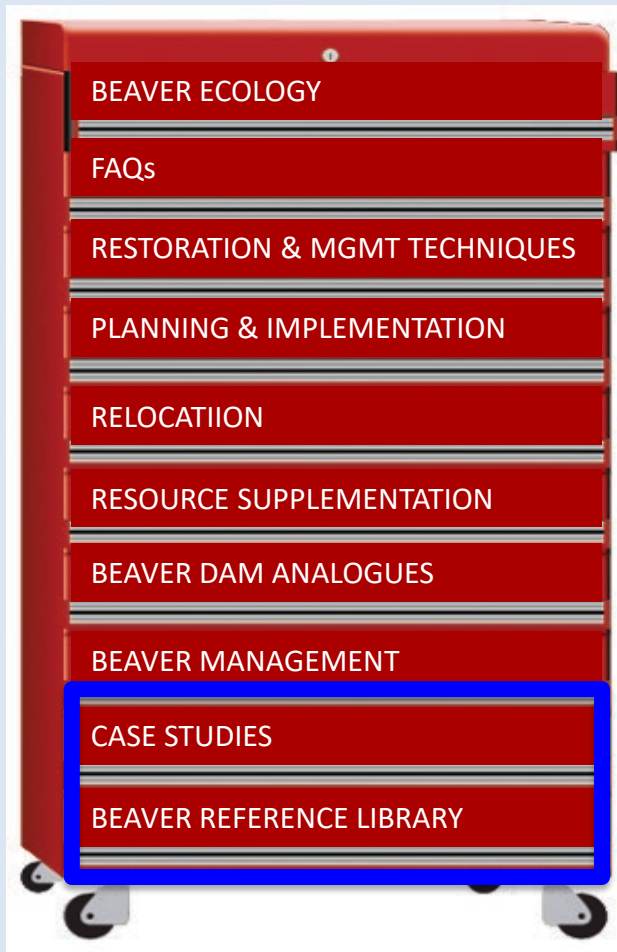
Ch. 8- Managing habitat for beaver

Ch. 9- Non-lethal MGMT

Ch. 10- Beaver dam viability matrix

Ch. 11- Case studies

# Beaver Restoration Guidebook



## Section 3 – Supplemental Info

Beaver Resources

Acronyms & Abbreviations

Literature Cited

Plant Species

Subspecies

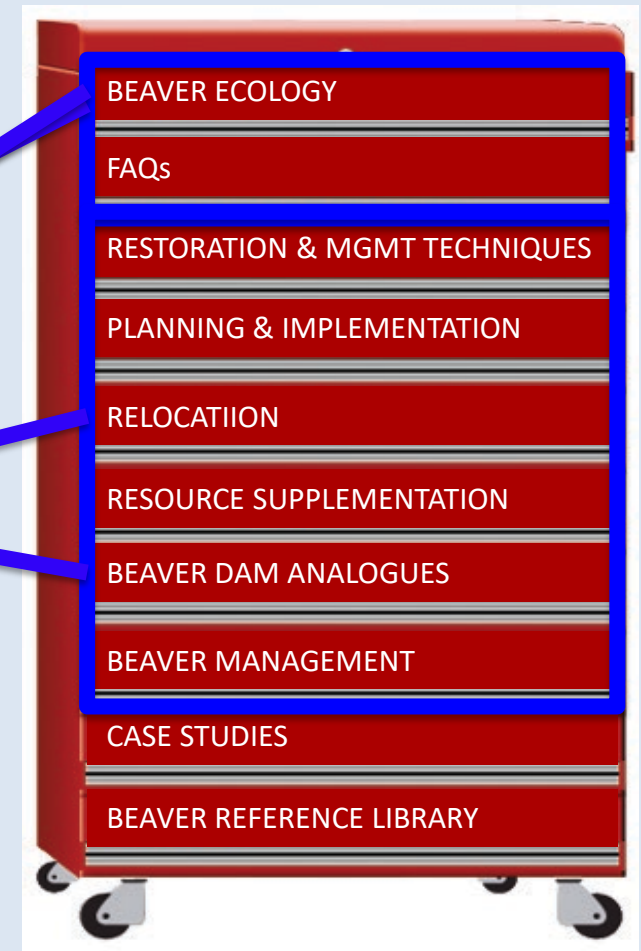
# EPP 726 Day 1--Morning

## Section I, Ch. 1&2

### In the field at Bridge Creek

- Beaver modifications
- Habitat Creation
- BDAs
- Trapping Beaver

## Section II, Ch. 5,6,7,8



# EPP 726 Day 1--Afternoon

## Back in the Classroom

- Beaver ecology
- Eco-geomorphic impacts of beaver dams

Section I, Ch. 1&2



# EPP 726 Day 2--Morning

## In the field at Crooked River

- Trapping beaver
- Sexing
- Processing
- Lodge construction

Section II, Ch. 5



# EPP 726 Day 2--Afternoon

## Back in the classroom

- Methow Beaver Project
- Guidebook Version 2.0
- Beavers and Climate Change

Section II, Ch. 5

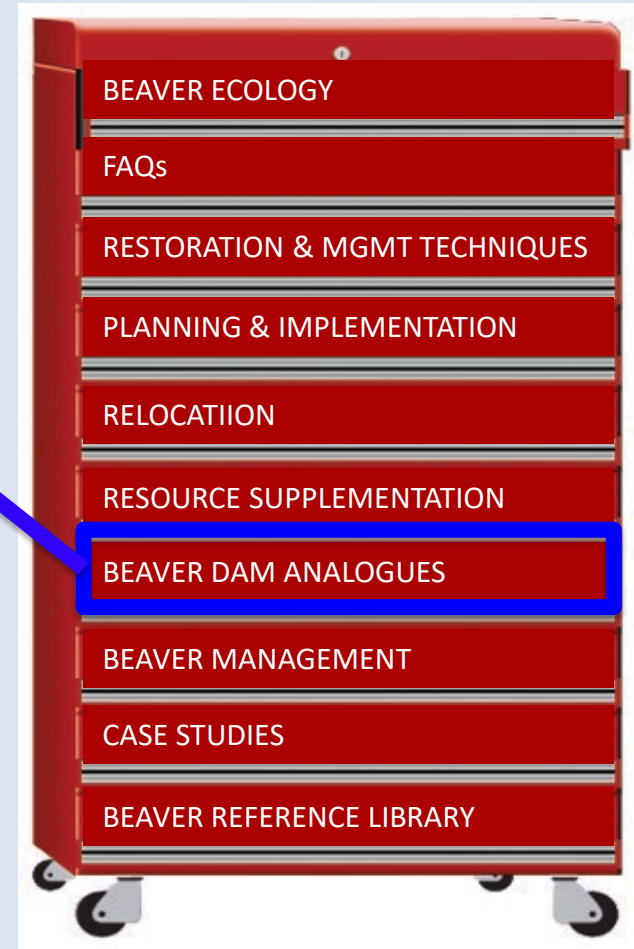


# EPP 726 Day 3--Morning

## In the field at Crooked River

- BDA Construction
- Materials, methods, and equipment

Section II, Ch. 6 & 7



# EPP 726 Day 3--Afternoon

## Back in the classroom

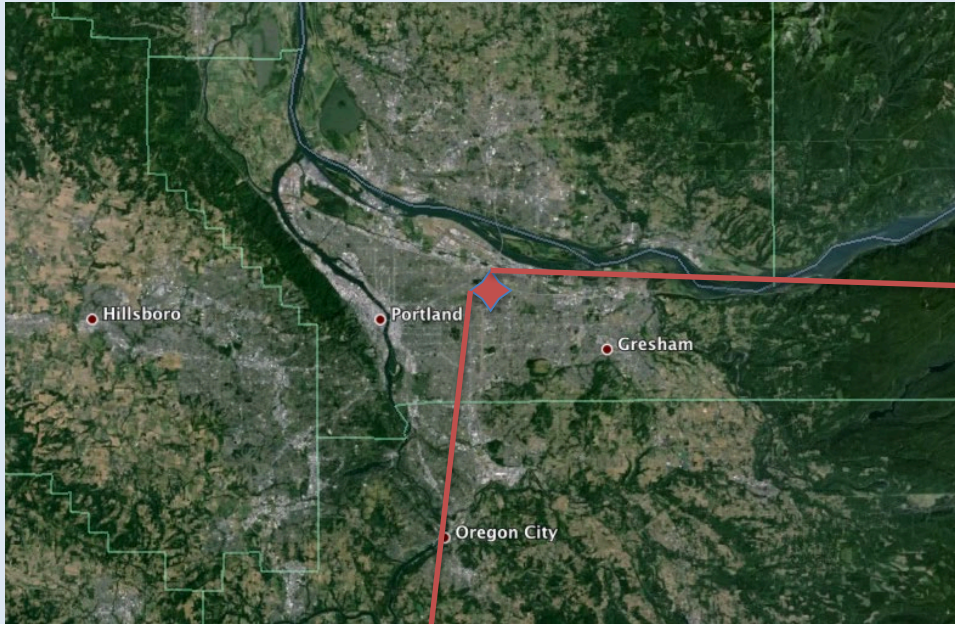
- BDA impacts
- Habitat preference models
- Design & layout for BDAs

Section II, Ch. 4, 6, 7, 8



# Application of the BRG

## Mason Flats Wetland



# Application of the BRG



## Project Goals

Improve Columbia Slough water quality

Improve habitat for native species

Increase floodplain function and FW storage

Increase riparian veg.

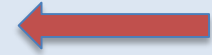
Protect and enhance wetland habitat

# Major Questions

Is beaver-based restoration applicable?



Will beaver modifications support the restoration project goals?



How will beavers impact this site?



What Techniques can be utilized to reach goals?

# BEAVER ECOLOGY SECTION

Chapters: 1-3

Increased water retention and baseflows

Decreased peak flows

Create habitat for red-legged frogs, painted turtles, willow fly-catchers

Increase riparian vegetation

Increased wetland habitat

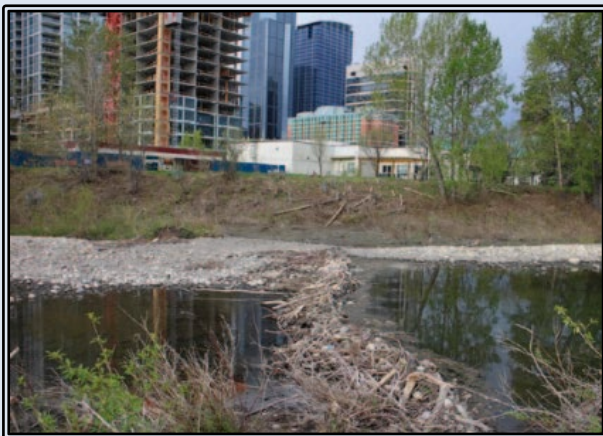
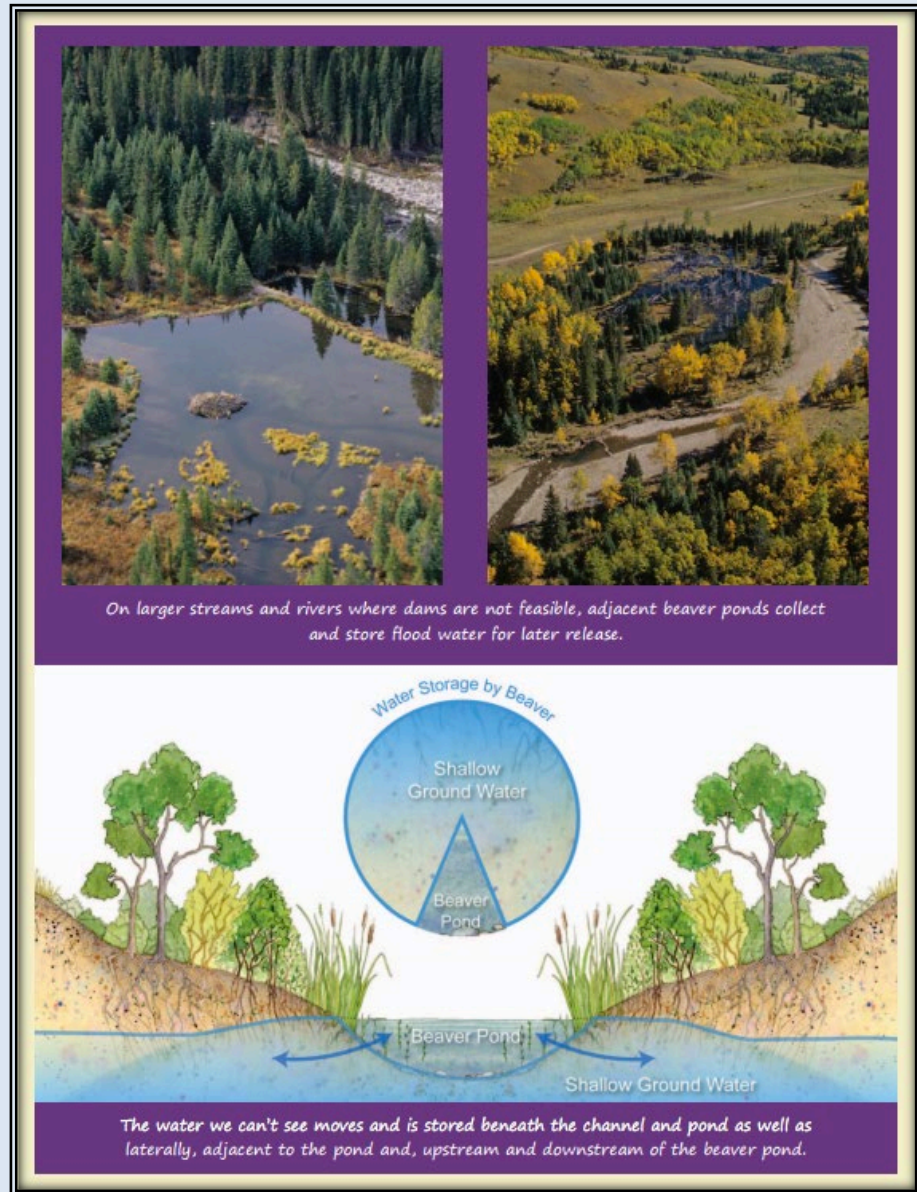


Photo: Fitch, L. 2016



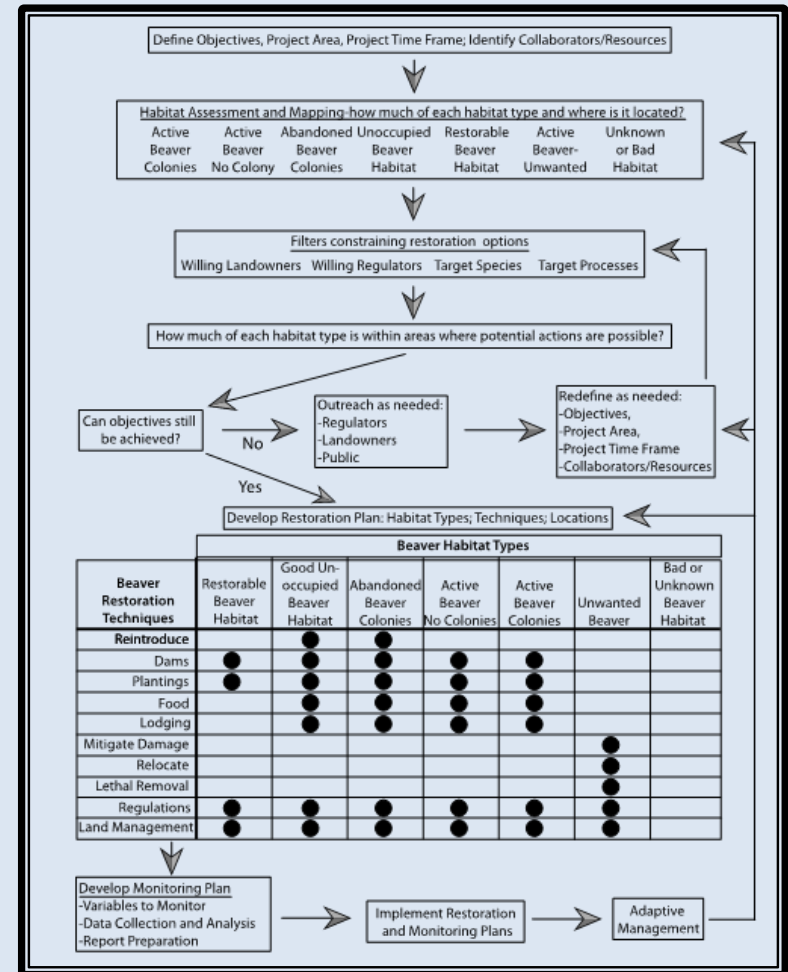
Fitch, L. 2016; [www.cowsandfish.org](http://www.cowsandfish.org)

# What Techniques Can be Utilized?

## Watershed Planning

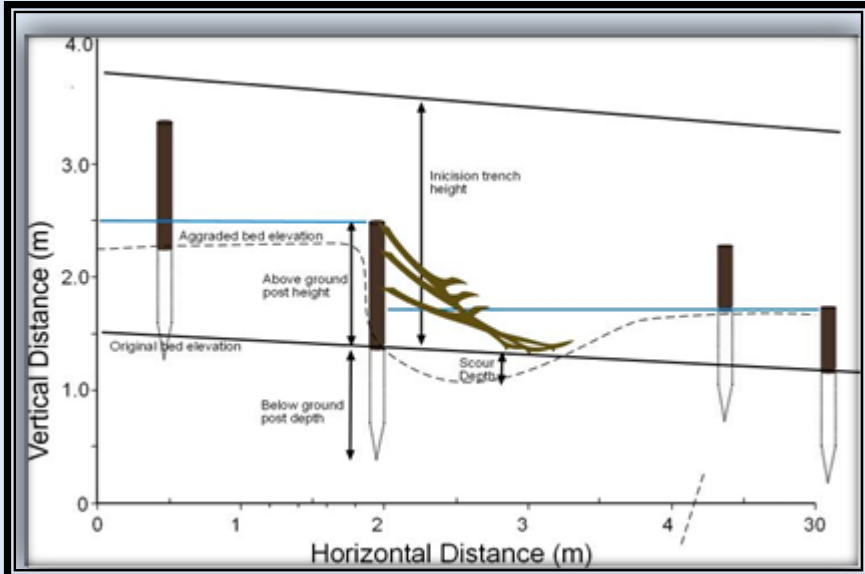
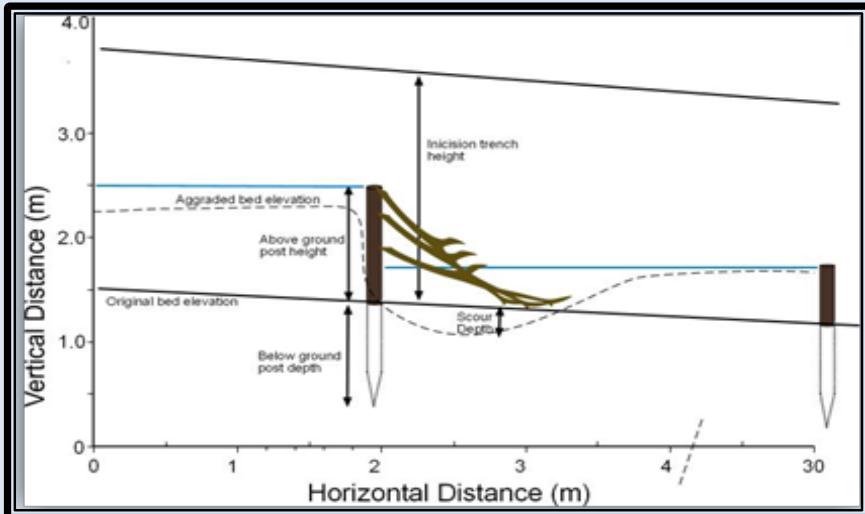
### Chapter 4

- Project Area, Time Frames, Habitat Assessment
- External Constraints
  - Adjacent land use
  - Community Assessment



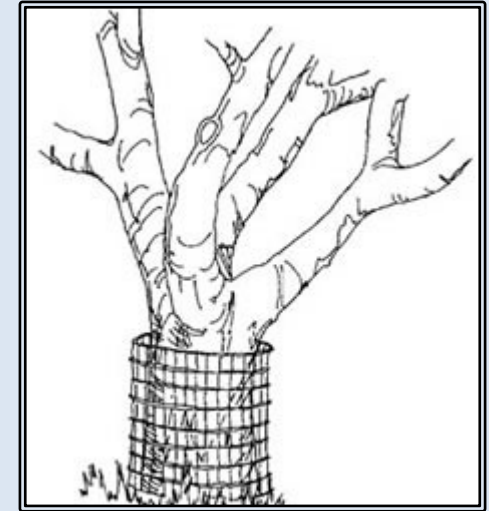
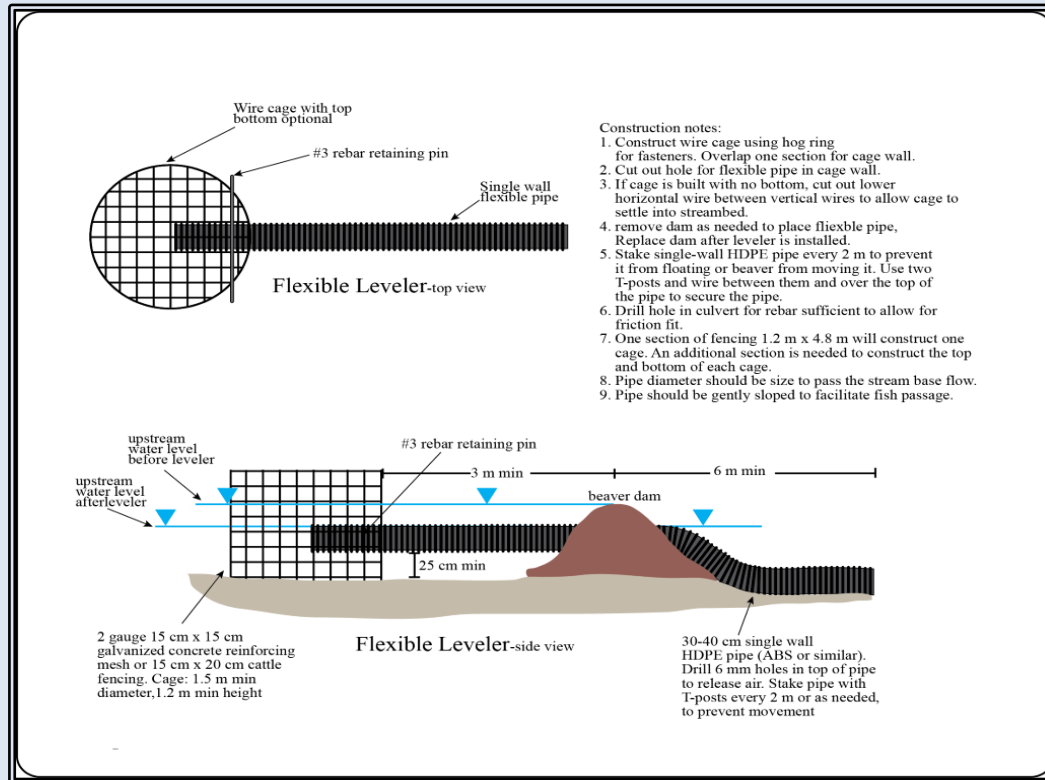
# Beaver Dam Analogues

Chapters 6 & 7



# Non-Lethal MGMT of Beaver

## Chapter 9



# Non-Lethal MGMT of Beaver

## Chapter 9



Fitch, L. 2016; [www.cowsandfish.org](http://www.cowsandfish.org)



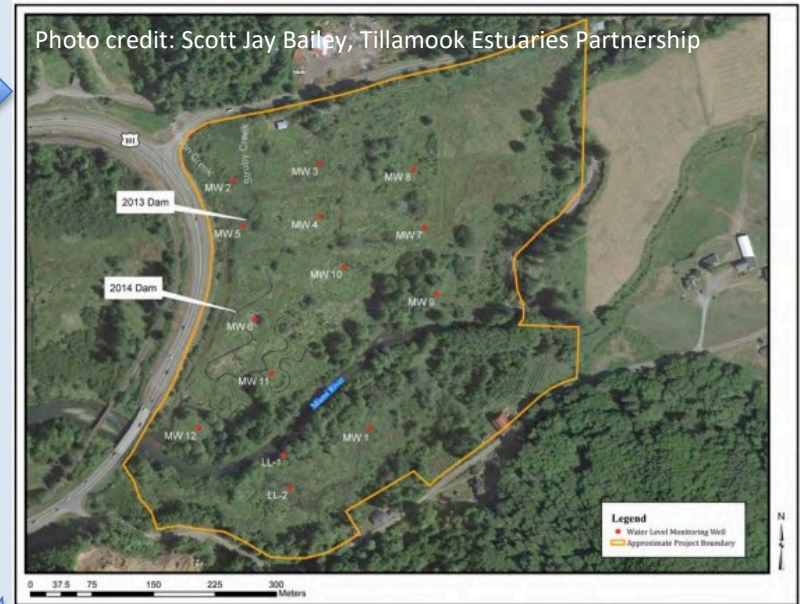
Methow Beaver Project: Photo



# Case Studies

## Chapter 11

1. Miami Wetlands, Oregon →
2. Camp Creek, Oregon
3. Mason Flats, Oregon
4. Tualatin Basin, Oregon
5. Wet Meadows, Idaho
6. Cucumber Gulch, Colorado ↘
7. Myers Creek, Washington
8. Hansen Creek, Washington
9. Private Ranch, New Mexico



# Case Studies

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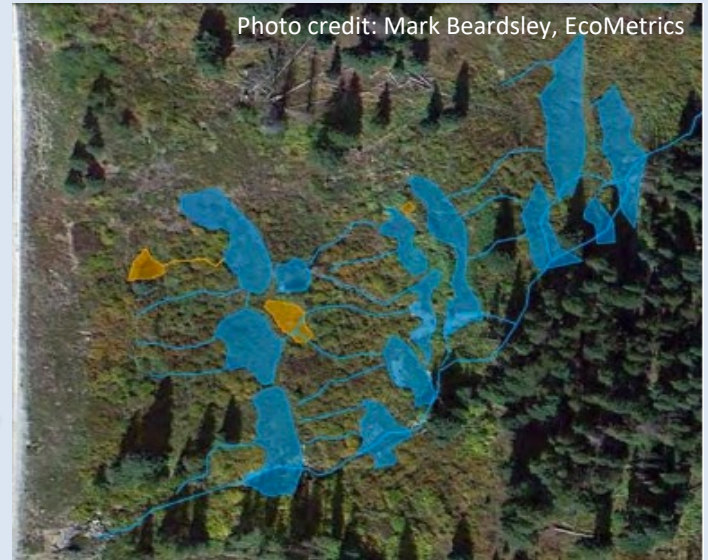
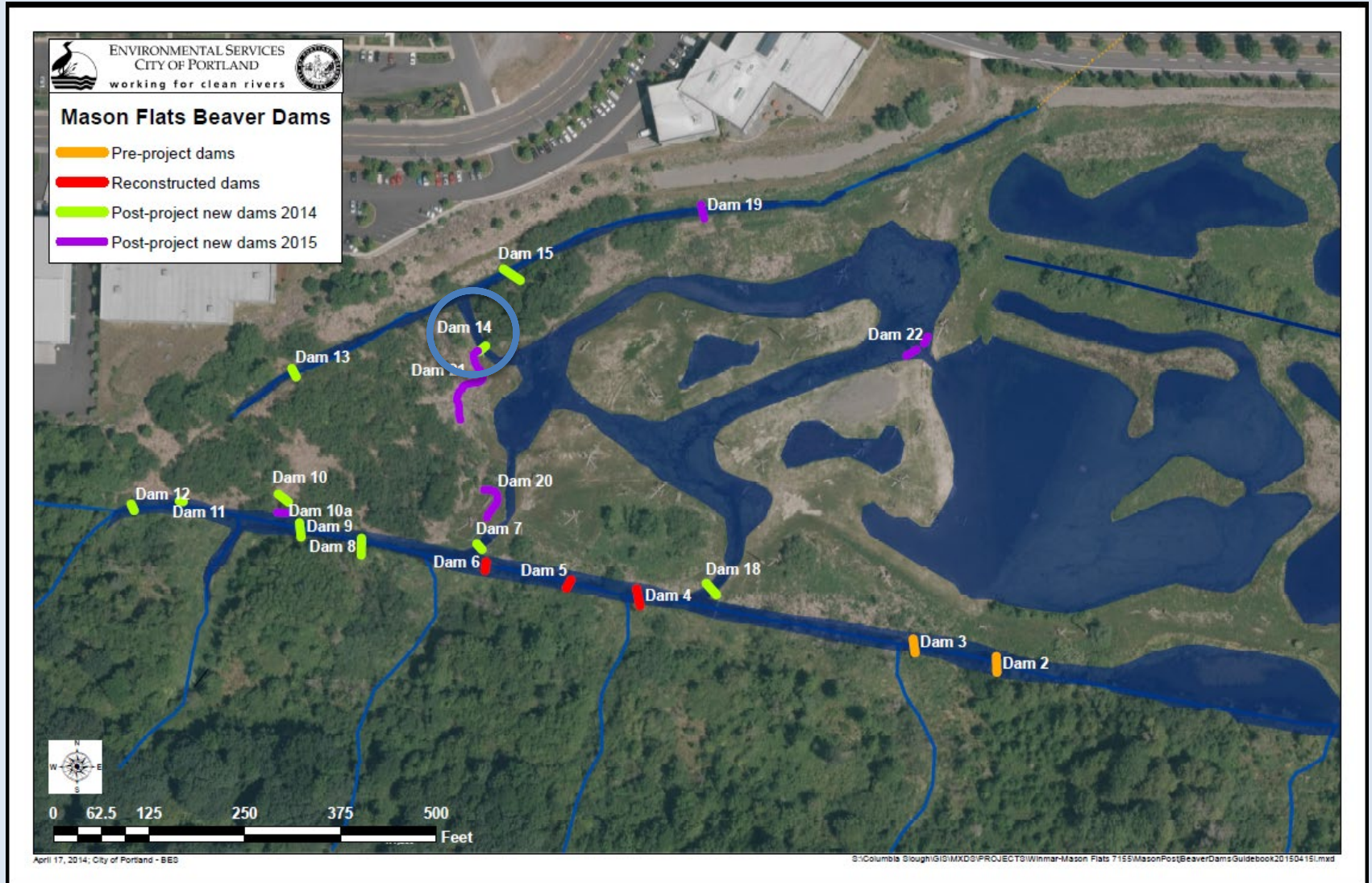


Photo credit: Okanogan Highlands Alliance

# Is Beaver Restoration Applicable?



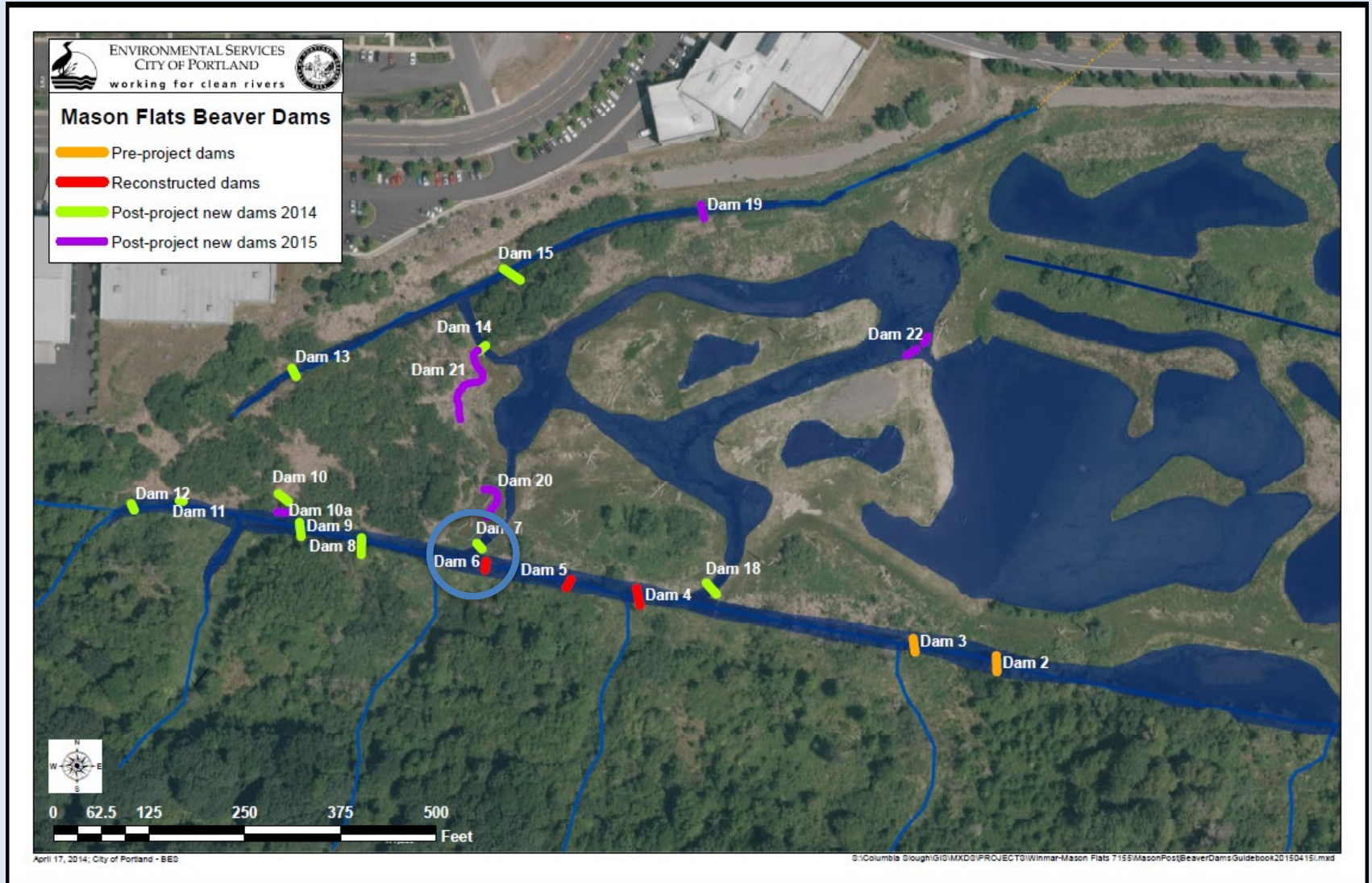
Dam 14 Oct. 10 2012



Dam 14 Oct. 10 2013



# Is Beaver Restoration Applicable?



Dam 7 March 2014



Dam 6 & 7 Sept. 2015





# Mason Flats



# Thank You

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DEQ

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503-349-4865

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<http://www.fws.gov/oregonfwo/ToolsForLandowners/RiverScience/Beaver.asp>





# BRG Release Statistics

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- Total Opens: 12,283
- Domains who forwarded to their networks
  - Mississippi State College of Forest Resources
  - Pacific States Marine Fisheries Commission
  - Great Northern LCC
  - USFS
  - Yurok Tribe
  - Confederated Tribes of Warm Springs
  - CDFG
  - ODFW
  - New York State Department of Enviro. Conservation
  - Natural System Design
  - State of Main

# BRG Release Statistics

## Twitter

[First tweet](#): 717 impressions, 9 engagements

[Second Tweet](#): 339 Impressions, 5 engagements

[Northwest Climate Science Center Tweet](#): 4,910 impressions, 48 engagements

*Independent tweets from others (+follower counts):*

[@AlbertaTomorrow](#) (838)

[@beckyhammer](#) (501)

[@cakeXchange](#) (1,241)

[@CleanWaterNews](#) (4,715)

[@clgrivervalleys](#) (208)

[@CowsandFish](#) (369)

[@DrTComendant](#) (37)

[@FSologists\\_AK](#) (1,048)

[@NW\\_CSC](#) (603)

- retweeted by official USFS, 87k followers, Ecological society of America, 17.6k followers

[@PLWAInfo](#) (33)

[@QuiviraAgRanch](#) (1,214)

[@RestoreCAL](#) (164)

[@restoreCAL](#) (164)

[@root\\_branch\\_des](#) (87)

[@SageGrouseInit](#) (1,479)

[@SARSAS](#) (125)

[@SEAlbertawaters](#) (1,682)

[@tswcd](#) (379)

[@USFWSPacific](#) (51.8k)

# BEAVER ECOLOGY SECTION

Chapters: 1-3

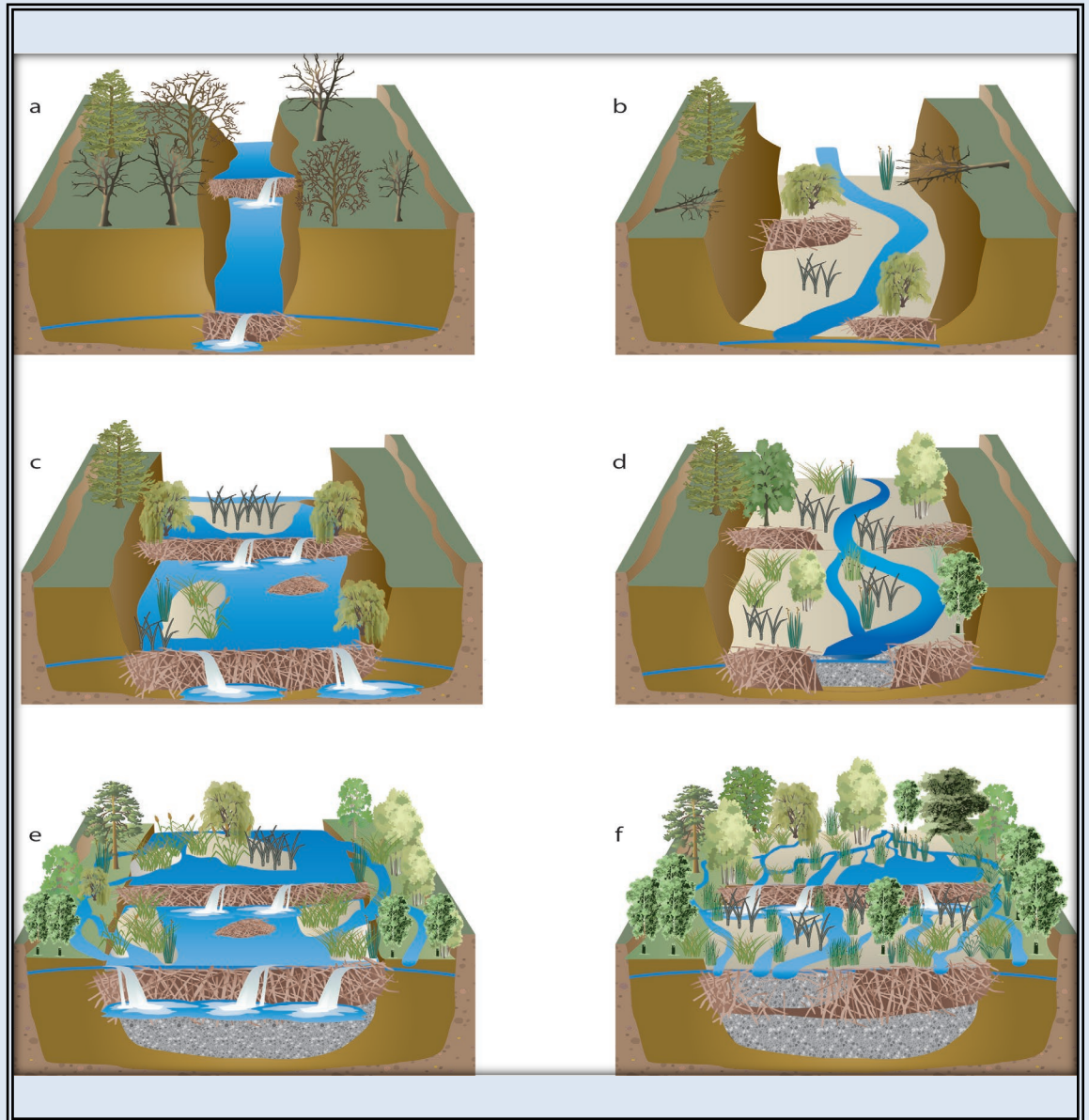
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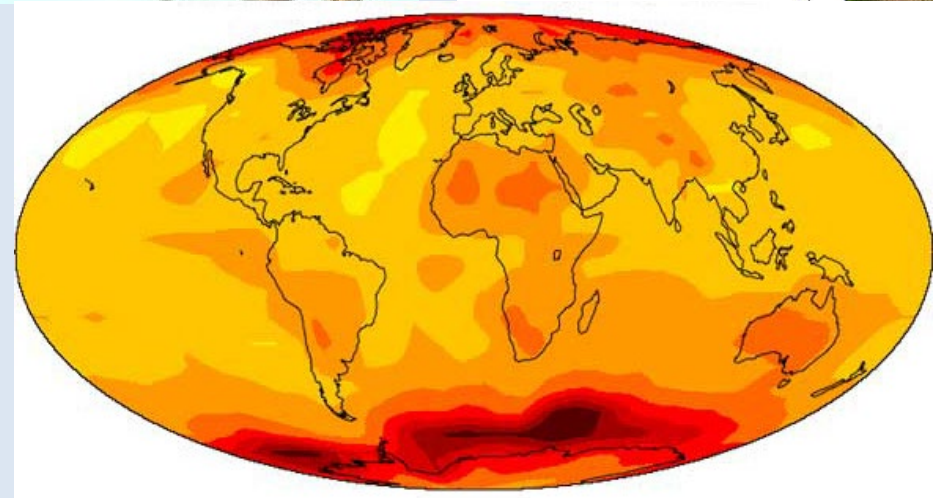
Climate Change

Pacific Salmon

From: [canadiangeographic.ca](http://canadiangeographic.ca)

Beaver

From: [commons.wikimedia.org](http://commons.wikimedia.org)



From: [nature-education.org](http://nature-education.org)