

# The Beaver Working Group: Purpose, Progress, Products, and Potential Projects

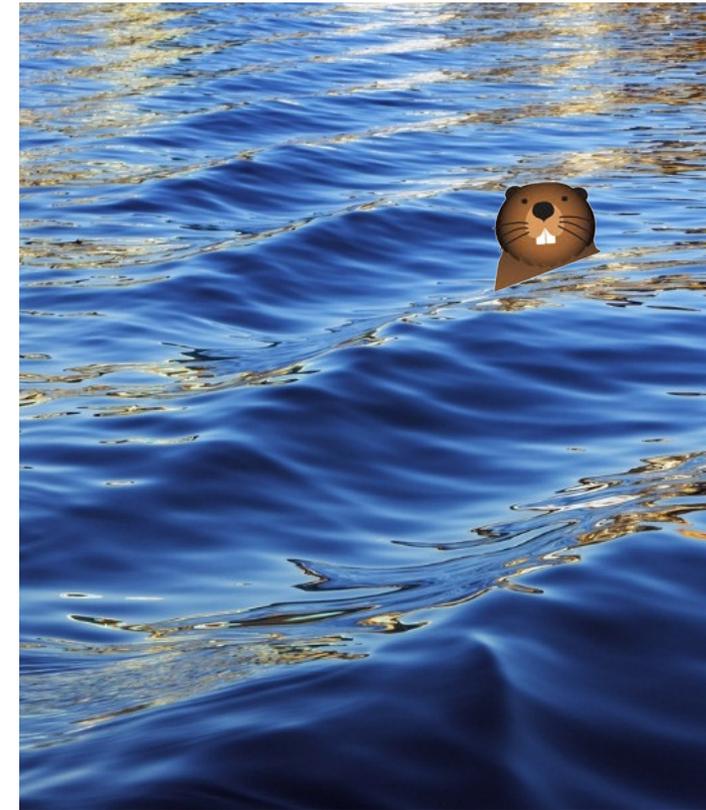
Jen Vanderhoof, Senior Ecologist

Science Seminar  
November 2018

Water and Land Resources Division



**King County**

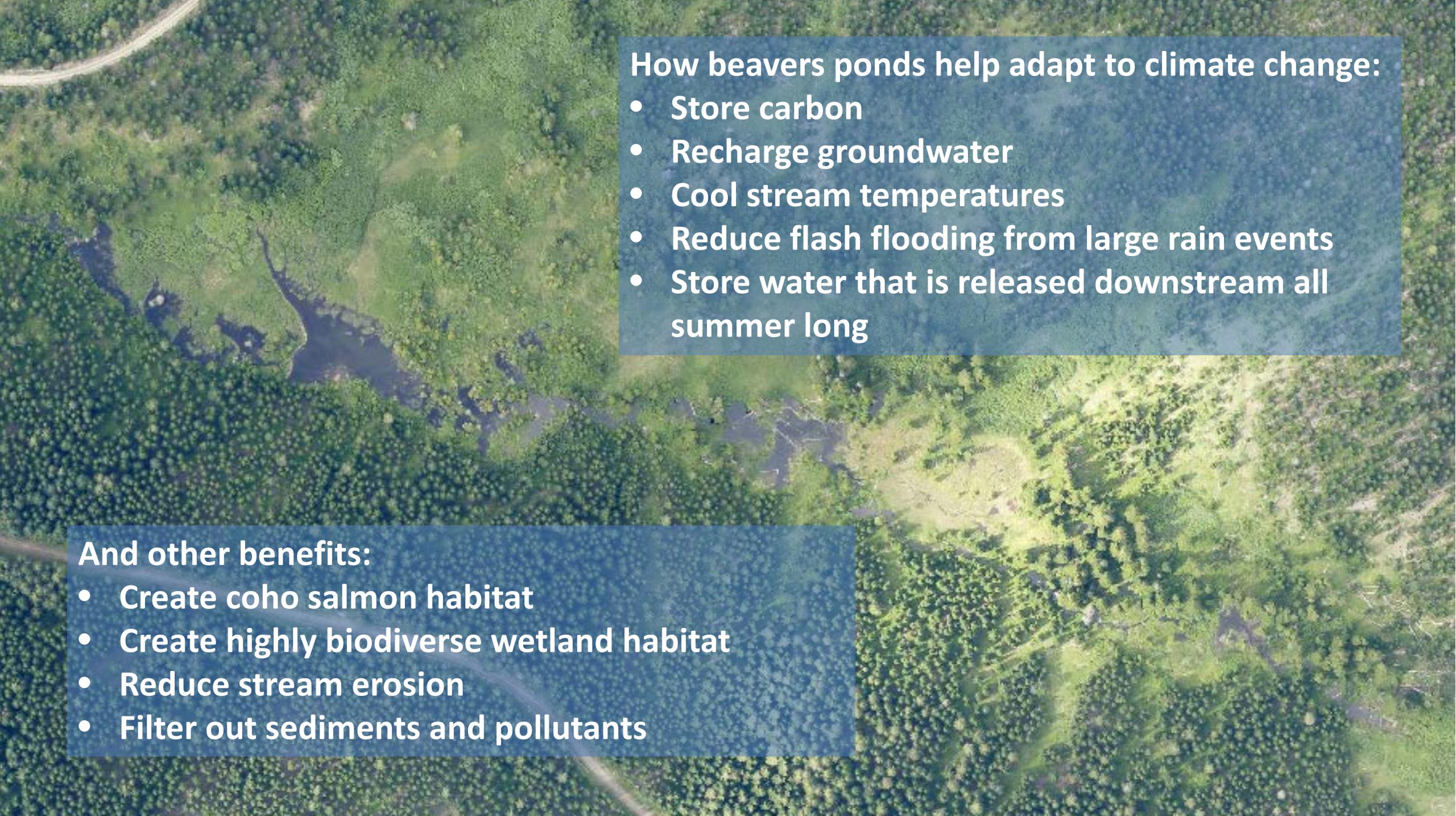






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- **Fur trade begins in Pacific Northwest: 1811**
  - **Trading hub established at Fort Nisqually: 1833**
  - **Large-scale logging established by: 1848**
  - **Beavers nearly extirpated from region by: 1850**

- **Denny party lands at Alki Point: 1851**
- **Seattle becomes incorporated: 1869**
- **Washington becomes a state: 1889**
- **First beaver relocation efforts in WA: 1920**

An aerial photograph of a lush green forest. A stream winds through the center, with several small, irregularly shaped ponds (beaver ponds) branching off from it. The water in the ponds and stream is a dark, deep blue. The surrounding forest is a vibrant green, with some areas appearing slightly more yellowish-green, possibly due to sunlight or different tree species. The overall scene is a natural, undisturbed landscape.

## How beavers ponds help adapt to climate change:

- Store carbon
- Recharge groundwater
- Cool stream temperatures
- Reduce flash flooding from large rain events
- Store water that is released downstream all summer long

## And other benefits:

- Create coho salmon habitat
- Create highly biodiverse wetland habitat
- Reduce stream erosion
- Filter out sediments and pollutants

# Co-existence...

## Beaver management planning

**2016** King County Comprehensive Plan, Policy E-499ii:

King County supports the coexistence of beavers and people in rural King County. King County should prepare a beaver management strategy to guide a program on issues such as where and how beavers and humans can co-exist with or without engineered solutions and where beavers should be excluded or removed.

**May 2016** Proposal for SWM funding for beaver management strategy. Approved  for 2017-2018 budget.

**Spring 2017** Kicked off beaver management planning.

# Beaver Working Group

## Core Team:

1. Jen Vanderhoof, Science
2. Josh Latterell, ERES
3. Beth leDoux, WRIA 7
4. Brian Sleight, SWS
5. Kirsten Chapman, Parks
6. Grant Smith, Roads
7. David Sizemore, Parks
8. Eric Beach, RRS Ag.
9. Matt Maynard, DPER
10. Bailey Keeler, Science
11. Paul Adler, ERES
12. Brandon Duncan, SWS

## Extended Team:

1. Don Harig, Parks
2. Katy Terry, Parks
3. Connie Blumen, Parks
4. Laura Casey, DPER
5. Joan Lee, RRS
6. Janne Kaje, WRIAs
7. Jeanne Stypula, Rivers
8. Stephanie Shelton, Rivers
9. Kate O’Laughlin, Science
10. Lou Beck, SWS
11. Curt Crawford, SWS
12. Elissa Ostergaard, RRS WRIA 7
13. Nick Halverson, Parks



# From the Project Charter:

## Goal Statement

- Support the coexistence of beavers and people in King County while minimizing and offsetting unwanted beaver-related impacts.

## Project Statement

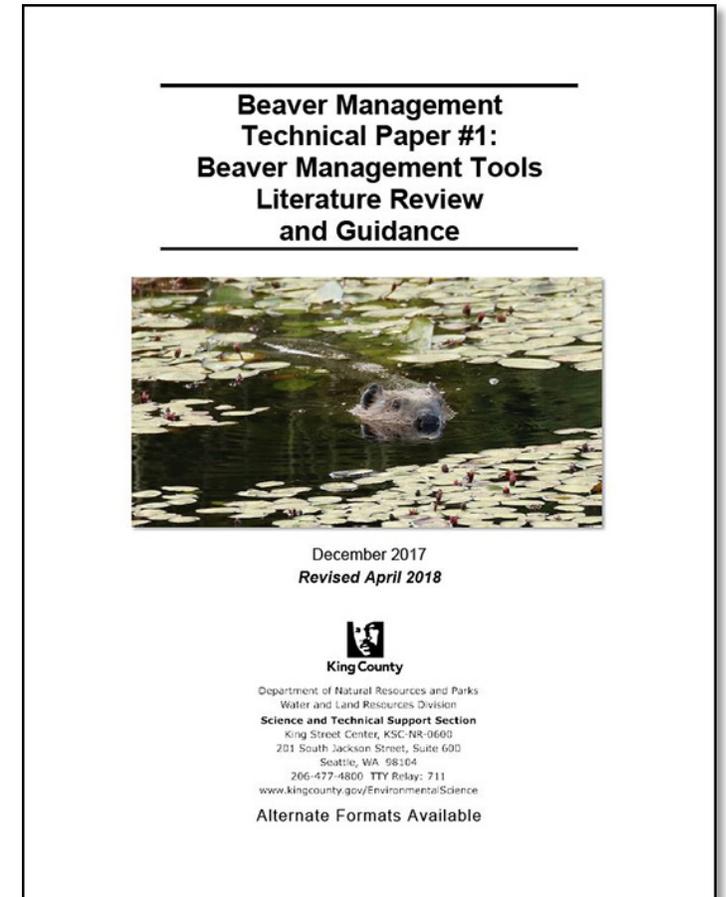
- This body of work will assemble and use a **scientific foundation** to establish policies and a working set of solutions (tools) for dealing with the variety of beaver-related issues (such as flooding) in King County. This body of work will include sharing of information with other agencies and stakeholders.



# Accomplishments

## Scientific Foundation

- Beaver Management Tools Literature Review and Guidance ([Technical Paper #1](#))
  - Management tools [matrix](#)
- Beaver Life History and Ecology Literature Review (in progress)
- Predicting Beaver Behavior—Habitat Suitability Literature Review (in progress)



# Accomplishments

## Advancing the Science

- Scope studies:
  - Fake scent mounds ([Bailey will tell you about](#))
  - Predator scents
  - Fish passage around devices
  - Beaver pond effects on stream temperatures in W. WA in 2019
- Wildlife cams
  - Documenting biodiversity of Big Spring Creek
  - Testing for use in our studies



# Accomplishments

## Tools & Data

- [Decision Flow Chart](#)
- Beaver activity [reporting app](#)
- GIS database of beaver activity
- Inventory & mini case studies of County-installed devices

**WHAT DO I DO IF I HAVE A BEAVER ISSUE?**  
Use our beaver management decision flowchart to help you decide what actions to take

**1 Are beavers impacting one or more properties?**  
MORE THAN ONE. GO TO 2.  
ONLY ONE - MINE. GO TO 3.

**2 Are property owners private or public?**  
PRIVATE. All landowners need to agree about the problem and desired outcome before proceeding. Once everyone is in agreement, GO TO 3.  
PUBLIC. Beaver-related flooding/tree damage is on public property. Contact the jurisdiction where the beavers are located. Need help understanding options for beaver management? GO TO 3.

**3 Can you live with beavers as long as they don't damage trees or cause flooding?**  
YES, but I would like more information. Go to the King County Beaver Management Program [problems and solutions](#) page at [kingcounty.gov/beavers](http://kingcounty.gov/beavers).  
NO. GO TO 4.

**4 What impact are beavers having on your property?**  
BEAVER DAM that may be a hazard to downstream properties. Contact Drainage Complaint line in King County's Stormwater Services at 206-477-4811.  
FISH PASSAGE. Go to the Beaver [FAQ](#) page on King County's Beaver Management Program website at [kingcounty.gov/beavers](http://kingcounty.gov/beavers).  
TREE AND OTHER VEGETATION DAMAGE. Refer to the Beaver Management [Tools Matrix](#), or for more detailed information go to Section 2.2 of the Beaver Management [Technical Paper #1](#): Beaver Management Tools Literature Review.  
FLOOD/WATER RELATED. GO TO 5.

**5 Flooding may occur in areas that also coincidentally have beaver activity. Have you had anyone verify that a beaver dam is causing the flooding?**  
NO. Have site evaluated by King County Stormwater Services. Call 206-477-4811.  
YES, the beaver dam is definitely causing flooding. GO TO 6.

**6 Can you live with beavers if there is no flooding?**  
YES, beavers can stay if we can find a way to control flooding. GO TO 7.  
NO, I would like to have the beavers trapped/removed. GO TO 9.

**7 What type of property is the flooding impacting?**  
FLOODING IS COVERING ROADS. Contact King County Roads Division at 206-477-8100. For more options, GO TO 8.  
FLOODING IS ENTERING MY HOME OR AG LANDS.  
► **Within unincorporated King County?** Contact King County's Drainage Complaint line at 206-477-4811.  
► **Inside city limits?** Go to [kingcounty.gov/services/environment/water-and-land/stormwater/problem-investigation](http://kingcounty.gov/services/environment/water-and-land/stormwater/problem-investigation) link to find out who can help. For more information, GO TO 8.

**8 Are beavers plugging a culvert or building free-standing dams away from culverts?**  
PLUGGING CULVERTS. Culvert fencing may help. Refer to the Beaver Management [Tools Matrix](#) or Section 2.33 of the Beaver Management [Technical Paper #1](#): Beaver Management Tools Literature Review for more information. Note that state and county permits may be required.  
FREE-STANDING DAMS AWAY FROM CULVERTS. Pond levelers may help. Refer to Section 2.3.2 in the Beaver Management [Technical Paper #1](#): Beaver Management Tools Literature Review for more information. Note that state and county permits may be required.

**9 Do you prefer beavers to be live-trapped and relocated? Note that trapping is considered a temporary solution.**  
YES, I prefer relocation to lethal trapping. Opportunities for beaver relocation are limited. Washington State Department of Fish and Wildlife is working out the permitting process. At present, the [Tulalie Beaver Project](#) is the only group doing beaver relocation in Western Washington.  
NO, relocation is not an option. Hire a trapper. For more information go to the King County Beaver Management Program Resources page at [kingcounty.gov/beavers](http://kingcounty.gov/beavers).

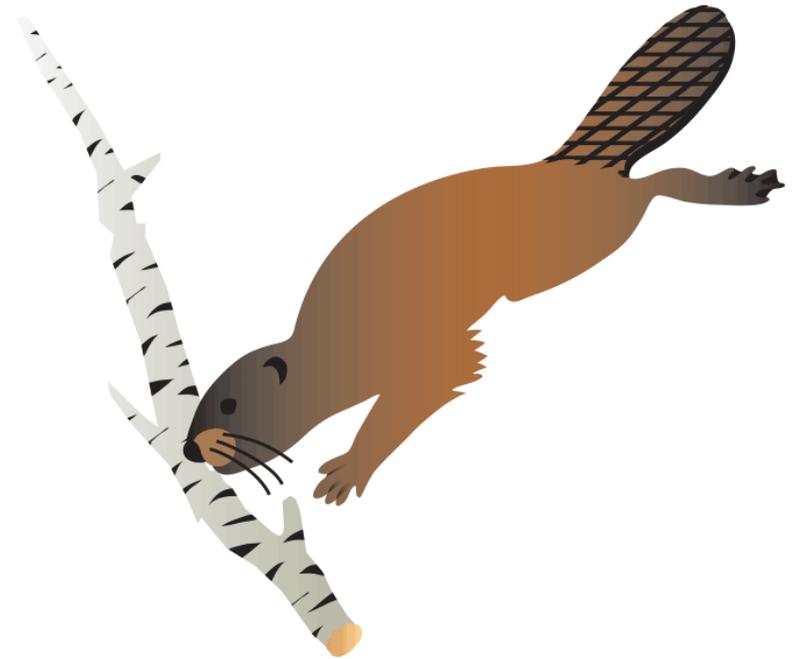
**King County**  
Department of Natural Resources and Parks  
Water and Land Resources Division

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# Accomplishments

## Project Planning

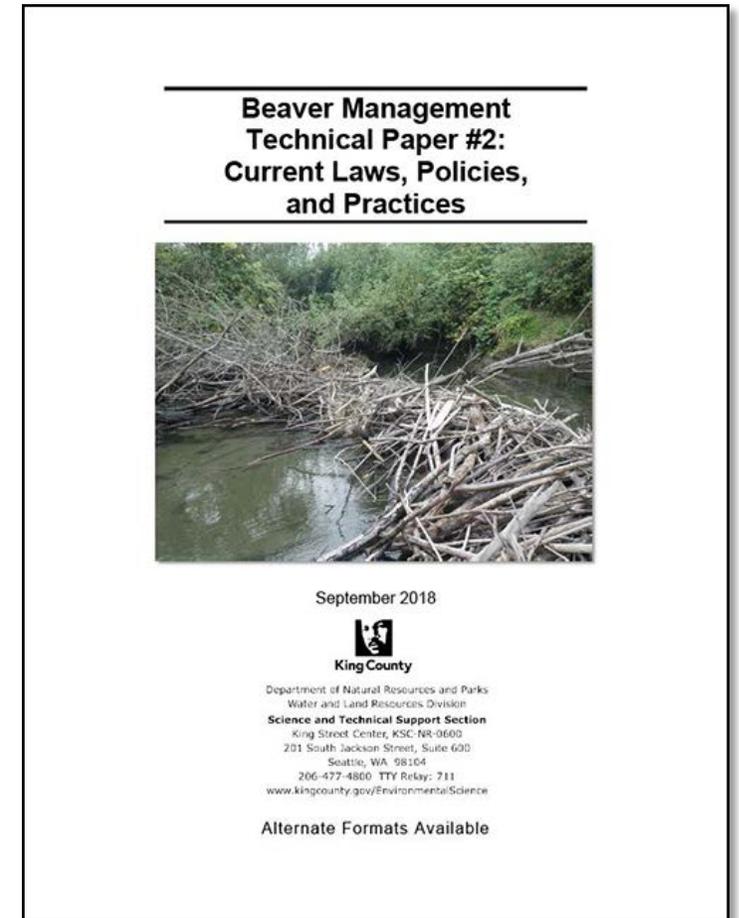
- Scenarios to consider for project planning (How to think like a beaver and plan accordingly)
- 2 long case studies (Big Spring Creek and Taylor Creek)



# Accomplishments

## Policies and Code

- Current Laws, Policies, and Practices ([Technical Paper #2](#)):
  - History of beaver trapping in Washington
  - Lay-person summary of WDFW's beaver-related laws
  - Current King County policies & practices
  - Summary of other regional agencies' policies & practices
- New King County Code proposal for DPER permits related to beaver dams and devices. [To be submitted ~2019.](#)
- Response matrix, in progress
- Good Neighbor Policy

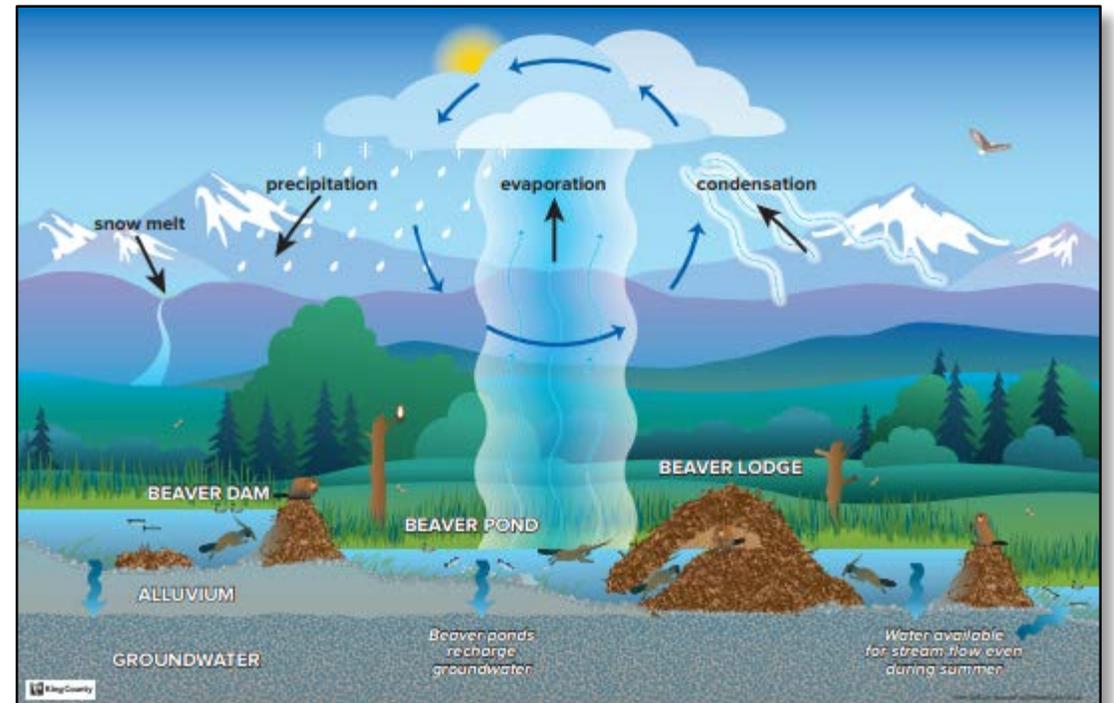


# Accomplishments

## Education

- Website – [kingcounty.gov/beavers](http://kingcounty.gov/beavers)
  - [Beaver FAQs](#)
- [Hydrology Poster](#)

Look under “Beaver Working Group” for all these work products



# Coming Next

## 2019-2020 at a Glance

- Produce Beaver Impacts and Effects Literature Review
  - Including examination of contributions to climate change adaptation
- Produce “Easy Guides” for each technical paper
- Deliver beaver management workshops to King County work groups
- Attend WRIA Technical Committee meetings to present our work and build relations
- Implement studies





**If you want to stay informed:**

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**Huge thanks to Dawn Duddleson, Librarian.**



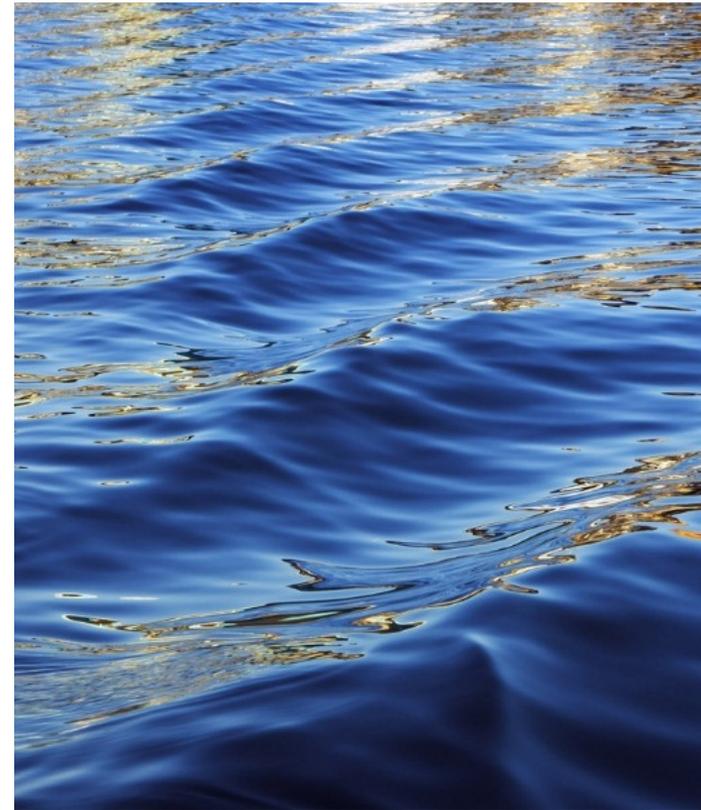
# Artificial Scent Mounds

A Potential Tool for Co-Existing  
with Beavers

Bailey Keeler

Science Seminar  
November 2018

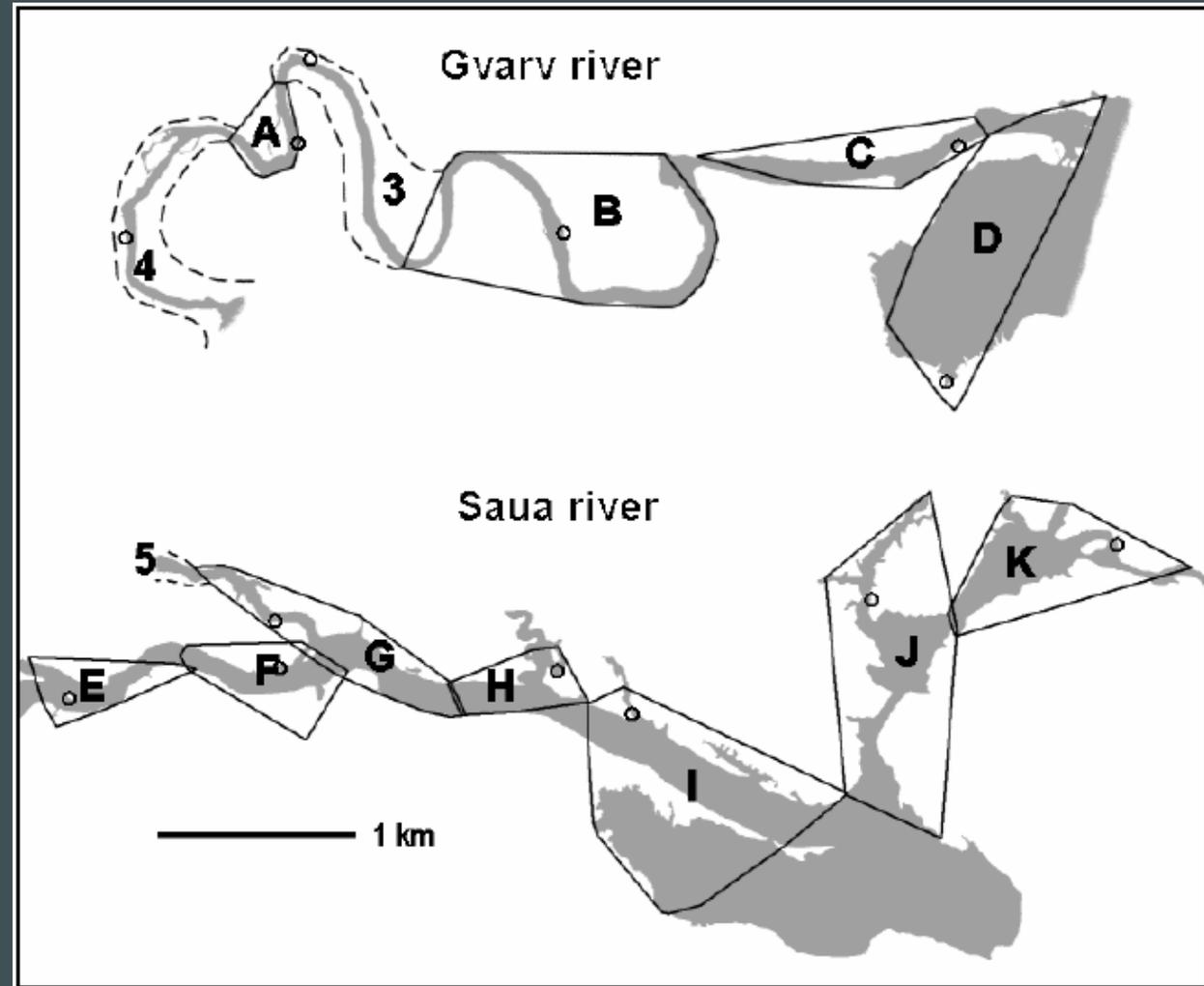
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# Beaver Territoriality

- Very territorial
- Little to no territory overlap between colonies even at high densities
- No sharing of feeding areas, winter food caches, dens, lodges, or ponds
- Outside the colony, beavers rarely interact



Territories based on radio telemetry of beaver movements

Campbell et al. 2005. (Eurasian beaver)

# Scent Mounds

- Piles of mud, twigs, leaves, grass, or aquatic plants with castoreum deposited on top
  - Castor + urine = castoreum
- Size: barely perceptible to ~2 feet in height



# Territorial Function of Scent Mounds

(a)



- Placed along waters edge
- Often at strategic locations
  - Trails, dams, lodges, territory edges

Territories based on sightings and scent mounds  
Campbell et al. 2005. (Eurasian beaver)

# Management Potential

## - Previous Studies

Muller-Schwarze and Heckman 1980  
Welsh and Muller-Schwarze 1989

### Methods

- Placed mounds at vacated beaver sites

### Results

- Has beaver management potential
- Scent mounds delineated colony territories
- Scent mounds reduced transient beaver colonization of sites

### Other Established Use

- Trapper bait: put unknown castor scent in a beaver's territory and they will investigate



# Testing Management Potential

## – Proposed Study

### The Goal

Protect the plants!

- *Until plantings are mature enough to accommodate beaver foraging*

### The Question

Will artificially placed scent mounds (castor) prevent transient beavers from establishing colonies in 'new' restoration sites?



# Proposed Study - Site Selection

- Finding Suitable Sites
- > 100 plantings in King County 2015-2017!



# Proposed Study

## - Methods

- Treatment
  - ~6 scent mounds
    - Mimic natural placement
- Control Sites
  - No Castor on mounds



... to be continued



**King County**

Thank you.

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