BEAVERS: AGRICULTURE'S FOE TURNED FRIEND

Presenting: Charlotte Till*, Program on the Environment & Foster School of Business
Site Supervisor: Linda Lyshall, Snohomish Conservation District
Faculty Advisor: Clare Ryan, Environmental and Forest Sciences

Background

- Agricultural irrigation requirements will increase 5-8% by 2070 with population & environmental demands.
- Water table stability is decreasing from human misuse & habitat loss.
- Reintroduction of beavers can reverse channelization, recreate wetlands & raise water tables.
- Human-beaver conflict from flooding & property damages are common in agricultural areas.
- Misconceptions of beavers creates unwillingness to coexist & limited knowledge prevents proactive strategies

Research Question

What aspects of beaver-human conflict can be minimized to allow beavers to increase water table stability and aid watershed restoration efforts?

Internship & Methods

- I developed Snohomish Conservation District (SCD)'s Natural Resource Inventory, identifying environmental issues & programs in Snohomish County.
- My research methods were using literature review, GIS tools (Fig. 1) & interviewing SCD members to form a big picture of county issues

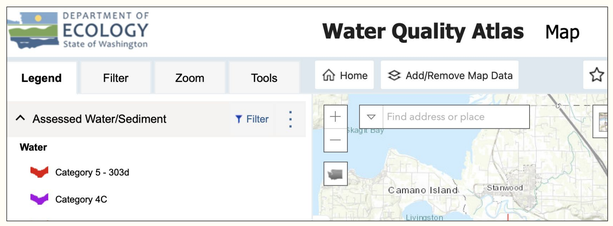

Figure 1. Mapping tool used to create 303(d) list for Snohomish County impaired water bodies.

Results

Infrastructure

- Flow management devices (Fig. 2) prevent previous repair related expenses
- Pond levelers & culvert protections keep water at desired level and prevent waterway blockage by beavers
- Tree caging and crop protection limit costs to livelihood
- Beaver prioritization research & landowner risk assessments
- Implementing a uniform, up to date recording system to streamline data

Figure 2. Pond leveler diagram, keeps water at landowner's desired level.

Outreach & Education

- Education of agricultural benefits & value brought by enhanced ecological services (Fig. 3)
- Improved framing in environmental communication
- Change perception from beavers were introduced by humans □ beavers are a natural part of the environment
- Proactive programs targeting identified high risk areas before issues arise
- Streamlined permitting process & financial resources

Management

- Identify areas at risk for conflict & improve localized beaver data
- Standardize how data is collected & quantified during processes
- Change government permitting structure to simplify for citizens
- Implement coexistence solutions

"to get someone through the permitting system to effectively implement programs"

– Bobbi Lindemulder, Agriculture Department Director

Benefits

Increases in:

- surface & groundwater (Fig. 3)
- species diversity & critical habitat
- carbon sequestration
- salmon well-being

Decreases in:

- stream flow velocity
- extreme flooding or drought
- excess nutrients from agriculture

Figure 3. Before (left) and after (right) beaver reintroduction, a demonstration of their ability to raise the water table.

Significance

- Snohomish County is priority farmland & a source of locally grown food
- Extreme conditions worsened by climate change, like flooding (Fig. 4) & drought, threaten farm survival
- Future research should record beaver populations & high conflict areas in Snohomish County
- Coexistence strategies should continue to be prioritized
- Landowner efforts should be incentivized similarly to other restoration programs

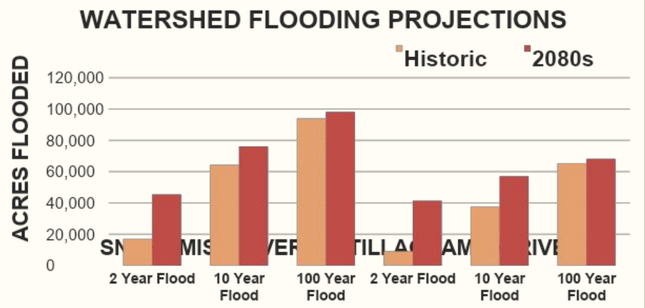

Figure 4. Historic vs 2080 flooding for Snohomish County from the Agriculture Resilience Plan projections.

Climate Change

- 2015 droughts led to $1 billion in crop losses statewide
- Global water needs will increase 20% by 2080
- Development pressures & decreasing habitat makes coexistence with wildlife more important
- Improving conflict resolution with beavers will better all human-wildlife management

Acknowledgements

Thank you to my site supervisor, faculty advisor, Clare Ryan, and all my other teachers and mentors in the PoE.

Contact Info

ctill2@uw.edu | +1(925) 451-0516