State Beaver Management Planning: A review of existing plans and programs with recommended best management practices

NAWM Webinar September 3, 2025

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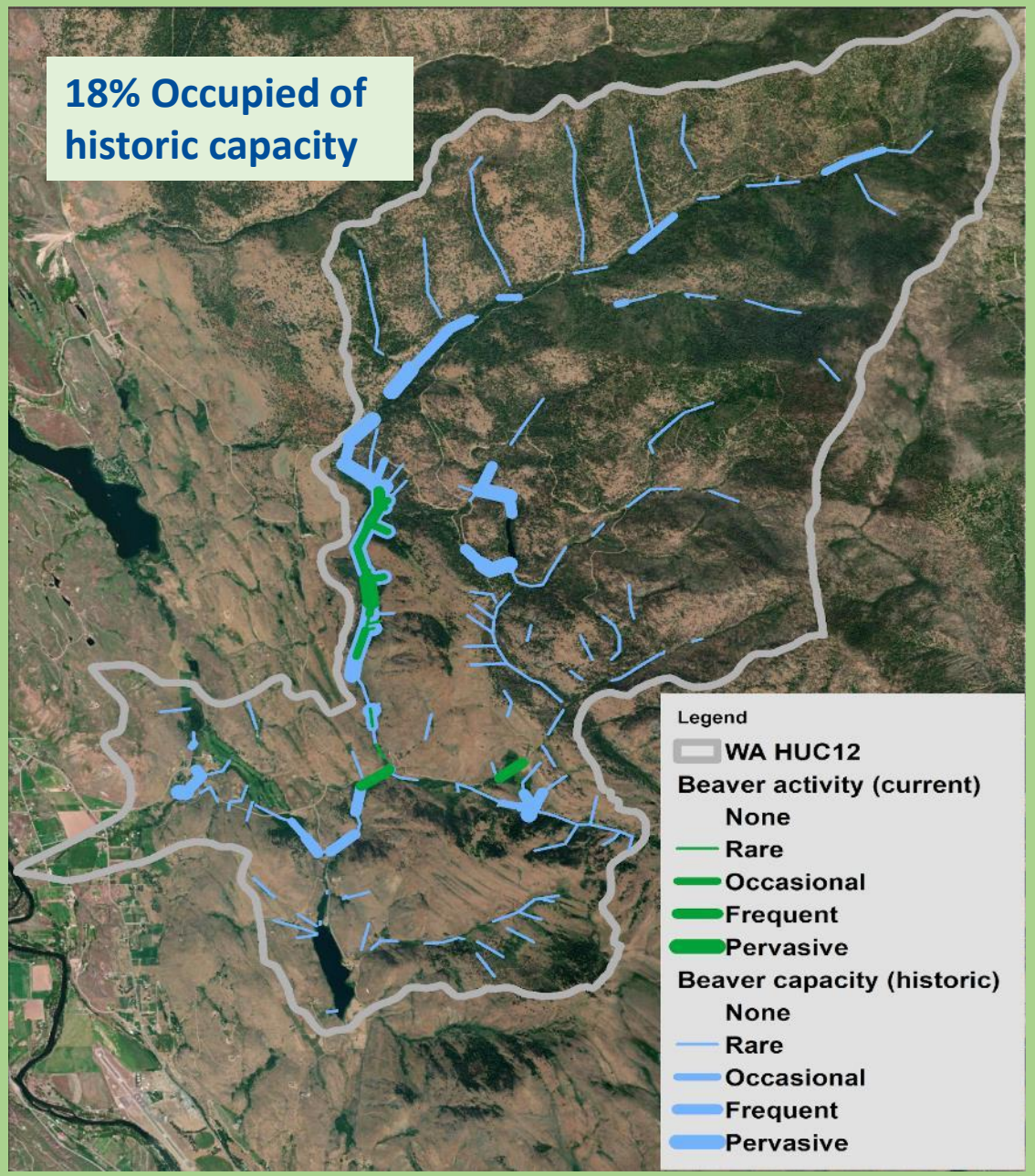
Reasons to Consider developing a statewide Beaver Mgt Plan

- **Historic beaver populations –** NOT recovered in numerous places where they can thrive in upper watersheds with lower risk of conflict.

A SBMP could be beneficial in:

- *developing further* ***recognition of the important benefits*** *of beaver-related stream/wetlands restoration;*
- *building* ***support for non-lethal*** *management;*
- ***coordinating*** *existing federal, state, and local agencies & NGO efforts to support* ***beaver education***, ***coexistence***, *and* ***restoration;*** *and*
- ***direct public and private funds to*** *increase beaver-related* ***restoration*** *activities where appropriate.*



Washington – Methow Basin Bear Creek – Map provided by Alexa Whipple, Methow Beaver Project

Keys to good planning – 8 recommended Best Practices

1. Collaborate with many stakeholders and seek overlapping values

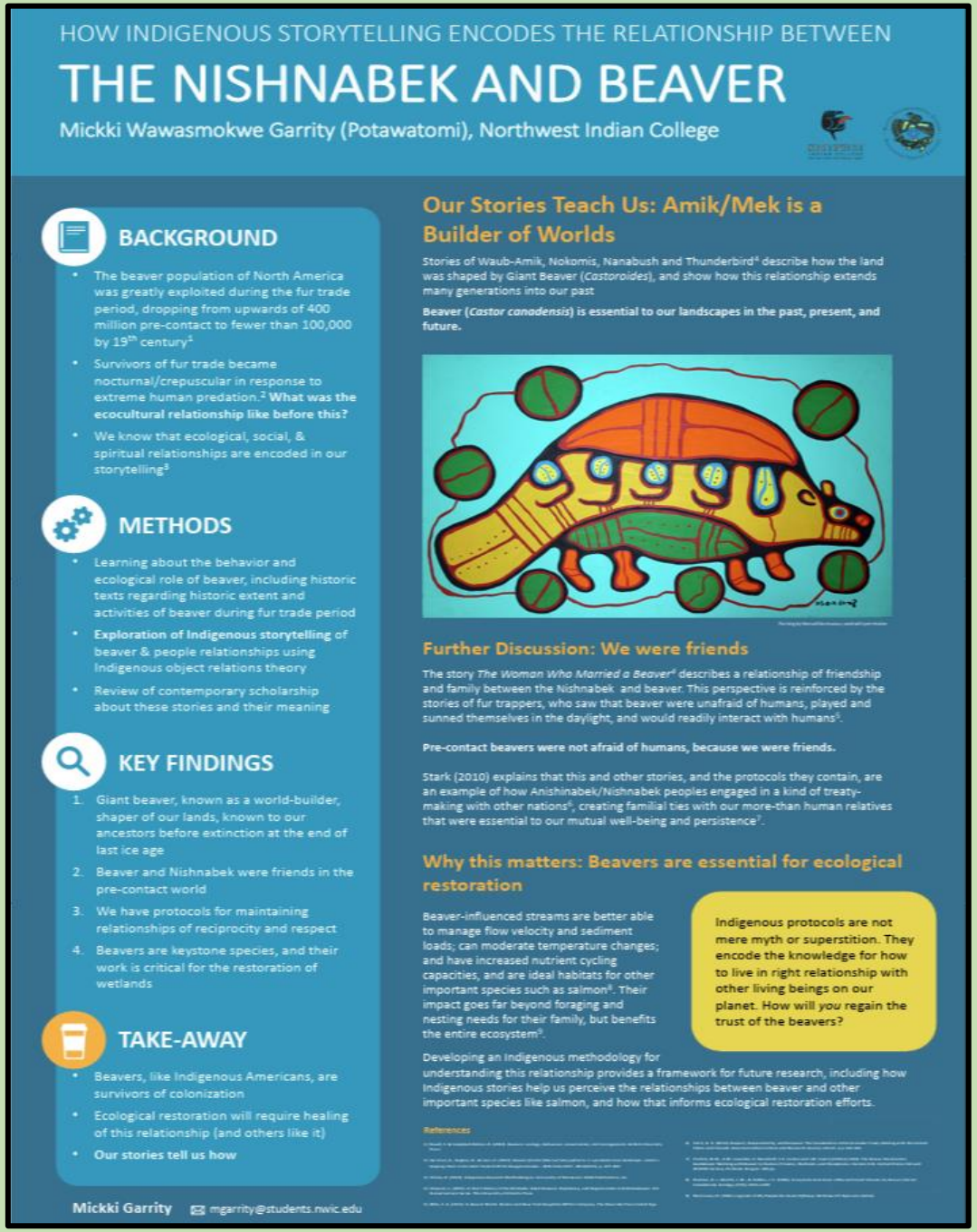
- Vital for stakeholders, decision-makers, and citizens to know **why beavers need to be the focus of a concentrated effort** and how it relates to mutual goals.
- **Important to identify and utilize areas of overlapping values** to create a unifying vision for beaver management that speaks to different lived experiences and viewpoints.
- **Possible examples** - Clean water, healthy streams, fire & drought resilience, love of wildlife (consumptive and non-consumptive).

Photo by Jackie Corday

Keys to good planning – 8 recommended Best Practices

2. Partner with Tribes and respect Traditional Knowledge

- Each Tribe has their own culture and points of view; many Tribes are championing beaver-led restoration work.
- Tribal resources, agencies, culture, and structure may function differently than state processes, but the ecological lessons are universal.
- Tribal perspectives, collaboration, and knowledge should be a part of any comprehensive state beaver management plan or program.



HOW INDIGENOUS STORYTELLING ENCODES THE RELATIONSHIP BETWEEN

THE NISHNABEK AND BEAVER

Mickki Wawasmokwe Garrity (Potawatomi), Northwest Indian College

BACKGROUND

- The beaver population of North America was greatly exploited during the fur trade period, dropping from upwards of 400 million pre-contact to fewer than 100,000 by 19th century[1]
- Survivors of fur trade became nocturnal/crepuscular in response to extreme human predation.[2] **What was the ecocultural relationship like before this?**
- We know that ecological, social, & spiritual relationships are encoded in our storytelling[3]

METHODS

- Learning about the behavior and ecological role of beaver, including historic texts regarding historic extent and activities of beaver during fur trade period
- **Exploration of Indigenous storytelling** of beaver & people relationships using Indigenous object relations theory
- Review of contemporary scholarship about these stories and their meaning

KEY FINDINGS

1. Giant beaver, known as a world-builder, shaper of our lands, known to our ancestors before extinction at the end of last ice age
2. Beaver and Nishnabek were friends in the pre-contact world
3. We have protocols for maintaining relationships of reciprocity and respect
4. Beavers are keystone species, and their work is critical for the restoration of wetlands

TAKE-AWAY

- Beavers, like Indigenous Americans, are survivors of colonization
- Ecological restoration will require healing of this relationship (and others like it)
- **Our stories tell us how**

Our Stories Teach Us: Amik/Mek is a Builder of Worlds

Stories of Waub-Amik, Nokomis, Nanabush and Thunderbird[4] describe how the land was shaped by Giant Beaver (*Castoroides*), and show how this relationship extends many generations into our past

Beaver (*Castor canadensis*) is essential to our landscapes in the past, present, and future.

Further Discussion: We were friends

The story *The Woman Who Married a Beaver*[4] describes a relationship of friendship and family between the Nishnabek and beaver. This perspective is reinforced by the stories of fur trappers, who saw that beaver were unafraid of humans, played and sunned themselves in the daylight, and would readily interact with humans[5].

Pre-contact beavers were not afraid of humans, because we were friends.

Stark (2010) explains that this and other stories, and the protocols they contain, are an example of how Anishinabek/Nishnabek peoples engaged in a kind of treaty-making with other nations[6], creating familial ties with our more-than human relatives that were essential to our mutual well-being and persistence[7].

Why this matters: Beavers are essential for ecological restoration

Beaver-influenced streams are better able to manage flow velocity and sediment loads; can moderate temperature changes; and have increased nutrient cycling capacities, and are ideal habitats for other important species such as salmon[8]. Their impact goes far beyond foraging and nesting needs for their family, but benefits the entire ecosystem[9].

Indigenous protocols are not mere myth or superstition. They encode the knowledge for how to live in right relationship with other living beings on our planet. How will *you* regain the trust of the beavers?

Developing an Indigenous methodology for understanding this relationship provides a framework for future research, including how Indigenous stories help us perceive the relationships between beaver and other important species like salmon, and how that informs ecological restoration efforts.

References

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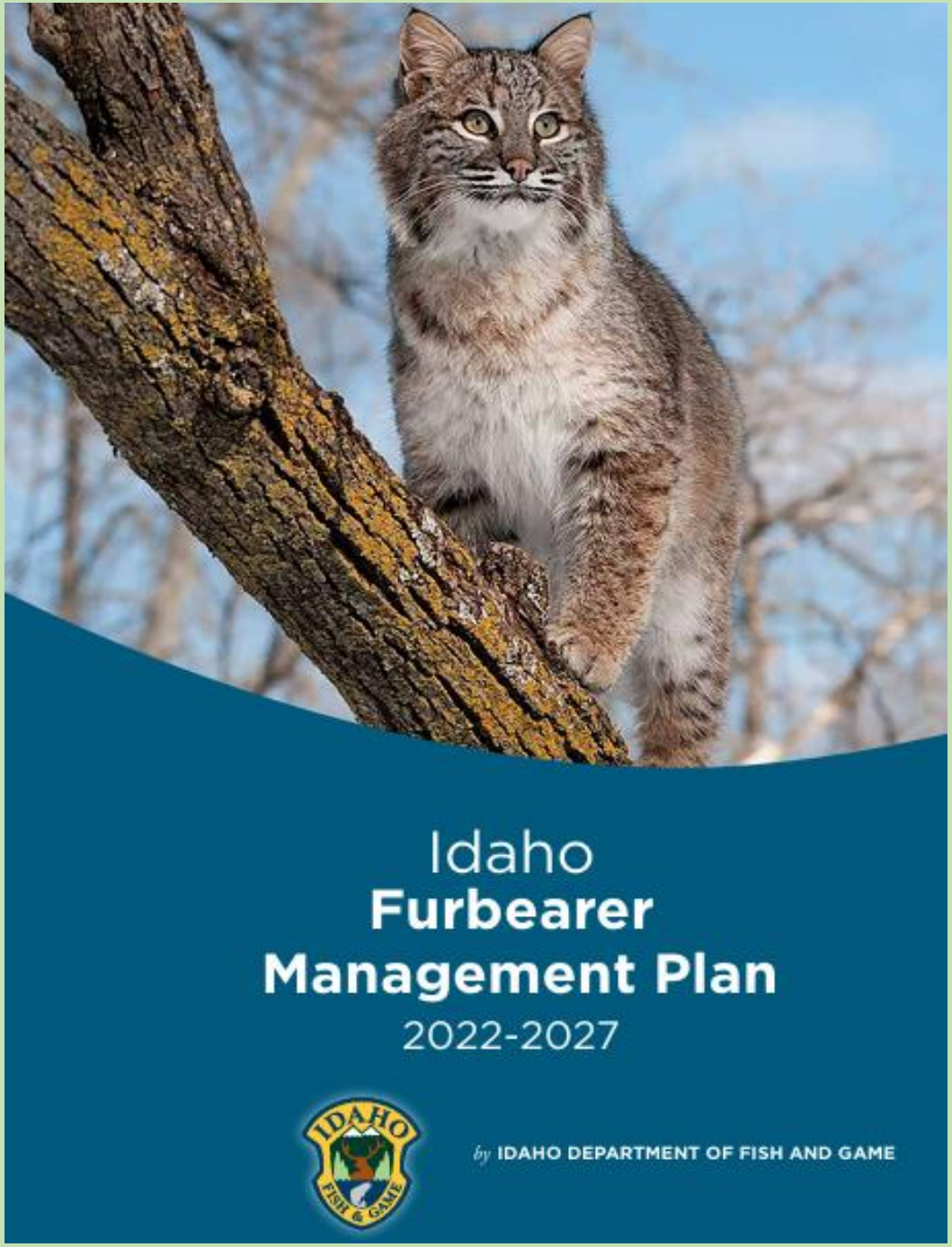
Keys to good planning – 8 recommended Best Practices

3. **Recognize history, legislation, and furbearer management**

- Current and past programs, legislation, and parameters will inform how the vision unfolds and what is necessary to achieve it.
- There are often older programs, plans, or legislation that could affect current beaver management (including furbearer mgt plans) that may be unknown to some stakeholders.
- Involve trappers early in the plan development process.



Keys to good planning – 8 recommended Best Practices

4. Establish or expand human-beaver conflict resolution tools

- **Education/info** should be readily available online and in print to help increase tolerance for living with beaver.
- **Cost share programs** - Landowners appreciate **free site visits to help identify solutions and cost-share programs** to help alleviate financial concerns.
- **Coexistence training programs** – DOTs & local govt public works, wildlife agencies etc are expressing interest

5. Address other known challenges and barriers

- **Typical concerns expressed**:
  - Fish passage of BDAs and beaver dams
  - Diseases that may be spread with beaver relocation
  - Effects to downstream water rights
- **Outreach/info share** on existing studies; assess when/where Pilot Projects are needed.
- **Assess capacity** to implement plans & programs – funding options.

Keys to good planning – 8 recommended Best Practices

6. Define & share responsibilities and expectations

- While wildlife agencies inherently lead on state species plans, **assigning specific tasks or deliverables to other stakeholders can help spread the burden** of responsibility and create buy-in.
- **Important to know who is responsible** for different aspects of the plan or program, especially for conflict resolution, such as coexistence device installation and funding.

7. Understand translocation versus recolonization methodologies

- **Natural recolonization** – the report describes BMPs to boost the likelihood of this happening.
- **Translocation** – report also delves into BMPs for relocating beaver.
- A good plan or program will reflect the costs, resources, and staffing required for including each pathway and weigh it against stakeholder goals and concerns.

Keys to good planning – 8 recommended Best Practices

8. Research state-specific data and knowledge gaps

- **SBMP and programs should be data-driven** (including biological and social science).
- **Common data gaps include:**
  - **Beaver populations and distribution**
  - **Condition of stream riparian corridors –** vegetation for food & shelter and water reliability
  - **Priority areas** for recolonization and relocation efforts

A common site across the West – degraded incised stream devoid of riparian veg – NOT a good reach for beaver, but could be with some restoration work.

Statewide Beaver Mgt Plan – Typical Chapters/Topics to Consider

1. **Identify key baseline information**
   - Beaver population & distribution
   - Limiting factors to recolonization
2. **Beaver natural history & ecology; importance to environment as a Keystone species**
3. **Living with Beaver – Coexistence Education & Support for landowners to manage conflicts**
4. **Identify Watershed/Habitat Restoration Priorities and Opportunities**
5. **Beaver Relocation – many things to consider**

Beaver ponds along Middle Beaver Creek, Western Colorado, photo by Jackie Corday

Statewide Beaver Mgt Plan - Chapters/Topics to Cover

1. Identifying baseline information

Overview of the "state of the beaver" – how are beaver populations and their habitat doing in your state?

Current population/distribution and **where they were historically that they could occupy again** with low conflict risk and high benefits for aquatic and terrestrial wildlife

- Typically, the only information available is through voluntary surveys of trappers each year
- Nuisance/conflict numbers usually not tracked

Limiting Factors to beaver recolonization

2. Beaver natural history & ecology; importance to environment as a Keystone species

Photo by Jackie Corday

SBMP Chapters/Topics to Typically Cover continued . . .

3. Living with Beaver – Coexistence Education & Support for landowners to manage conflicts

Typical SOCIAL conflicts or concerns:

- Flooding, culvert plugging, tree loss etc
- Water rights concerns
- Fish passage, stream temps, disease vector concerns

This chapter is one of the most crucial ones to develop with stakeholder input

Photo by Dr. Susan Charney, USDA Pacific Research Station

SBMP Chapters/Topics to Typically Cover continued . . .

4. Identify Watershed/Habitat Restoration Priorities and Opportunities

Beaver Restoration Strategies:

1) Actions that can help beaver "stay in place"

- education,
- coexistence approaches,
- trapping regulation changes e.g. allow for trapping closures in restoration areas

2) Stream/wetland restoration – work where beaver can naturally recolonize on their own when habitat improves.

Typical approaches include:

- grazing BMPs to reduce stress on riparian veg;
- beaver-mimicry structures where appropriate;
- riparian plantings

3) Relocation - of nuisance beaver into historic habitat with low risk of conflicts and high benefits

5. Beaver Relocation – many things to consider

- **What Types of facilities?**
  - Fish Hatchery Runs
  - Concrete floor/metal kennel type runs with livestock type water tank & lodge - on a budget
  - Mobile unit – trailer with dog kennel type space – shade & water
  - State of the art – Wyoming – next slide
- **Who Built & Manages them?**
  - Wildlife Agencies – USFWS and state agencies
  - Non-profits – usually in partnership with state or federal agencies
  - Tribes - Tulalip
  - University – USU Beaver Ecology & Relocation Center
  - Zoos – Portland, OR & Logan, UT zoos are working with restoration partners to relocate beaver
- **Who works daily to keep water & facility clean and supply food?**
  - Agency or NGO staff who own/manage the facility
  - Agency or NGO staff PLUS **volunteers** for daily beaver care

Photo of Leavenworth WA USFWS Hatchery
Beavers Work to Improve Habitat | U.S. Fish & Wildlife Service (fws.gov)

Beaver holding facilities - Protocols for beaver care & preventing disease spread

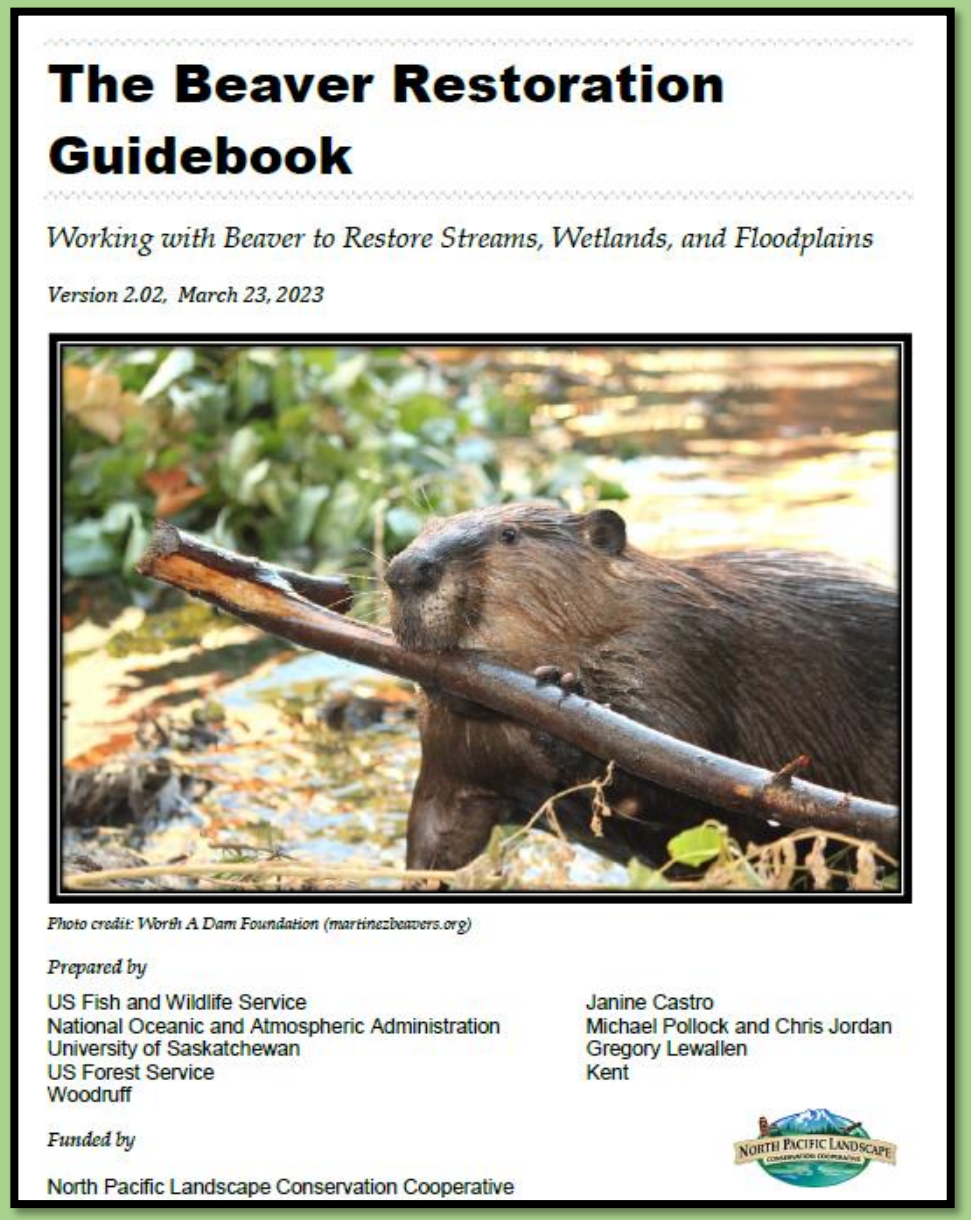
Common disease protocols - to lower risk of spreading beaver or fish diseases & aquatic invasive species (AIS)

- **Prior to arrival**, holding area treated with bleach or similar disinfectant
- **Upon arrival to holding facility**, health checks for diseases
- **House families together** - beaver from different locations are kept in different kennels
- **Holding area cleaned daily, water & food changed daily**, monitored for any health changes
- **Typical to held 3-7 days to monitor health** and capture whole family
- If beaver captured from area known to have Whirling Disease, they will not be relocated to a “clean stream”

Idaho Fish & Wildlife beaver facility; Photo by Jackie Corday

Relocation "Success" Varies Based on Many Factors

- **Two key things to note from the BRG:**
  - **Relocating beaver has occurred for over 100 years** to both recover their populations and restore stream/wetland habitat.
  - Much of the relocation work done from 1920-1960s was "***successful to the point that trapping bans were lifted*** *so that populations could be controlled*." BRG at p. 64.
- Unlike those historic efforts, every program interviewed **only relocates nuisance beaver who will otherwise be killed.**
- **Success is generally defined as beaver surviving -** signs of beaver activity **at or near** the release site the following spring or summer when sites are checked.



The Beaver Restoration Guidebook

Working with Beaver to Restore Streams, Wetlands, and Floodplains

Version 2.02, March 23, 2023

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Funded by

North Pacific Landscape Conservation Cooperative

Relocation “Success” Varies Based on Many Factors

- **Success ranges widely** – based upon conversations with relocation program staff & some studies, from **20-75%**.
- Key factors to help increase survival:
  - **Good site conditions & site prep** – water (perennial flows & 3’ deep pool), food, and shelter materials critical to survival are already present – practices include BDA work and building temporary shelter/lodges if **high predator area**
  - **Beaver care** – BMPs to lower stress in capture, holding, & release
  - **Involvement of wildlife professionals** – often the state wildlife agency, wildlife vets
  - **Beaver families** - capturing and releasing beaver families or mated pairs when possible

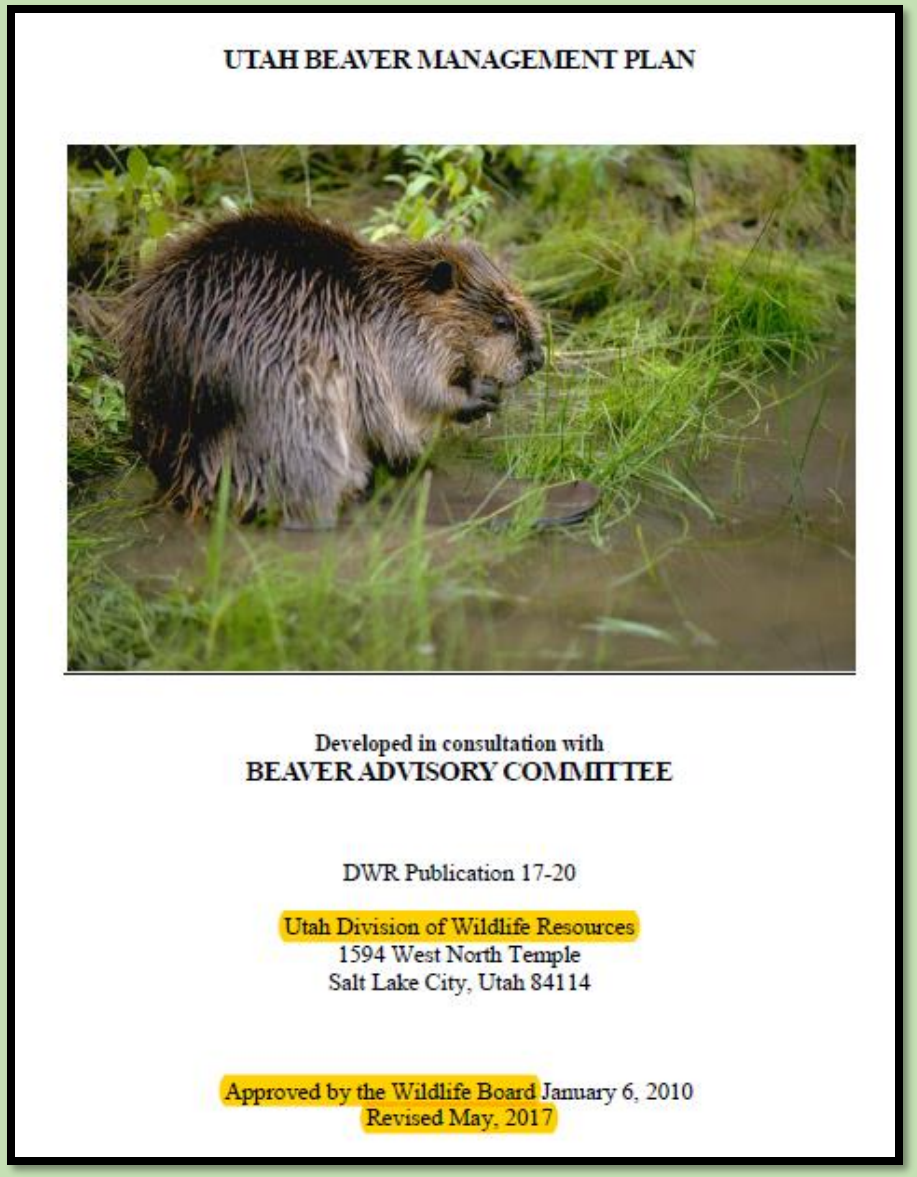
Photo from Slide by Dylan Collins, Assistant wildlife Biologist, Tulalip Tribes

Successful beaver relocation site in Eagle Rock watershed, Beckler River – slide from Dylan Collins PPT

Examples of State Beaver Management Plans (SBMP)

Utah – Adopted in 2017 by the Wildlife Board

- **Advisory committee** of many stakeholders
  - gave input & reviewed each chapter of the plan
- **Goals**
  - Maintain **healthy beaver populations – expand distribution** where appropriate (plan acknowledged they are not recovered from historic trapping);
  - Respond timely to beaver complaints and **increase non-lethal options**;
  - Increase watershed restoration through **nuisance beaver relocation where appropriate**;
  - **Education** of internal staff and landowners, sportsmen, local govt, educators etc "*of beaver management options and the role of beaver in Utah's landscape.*"

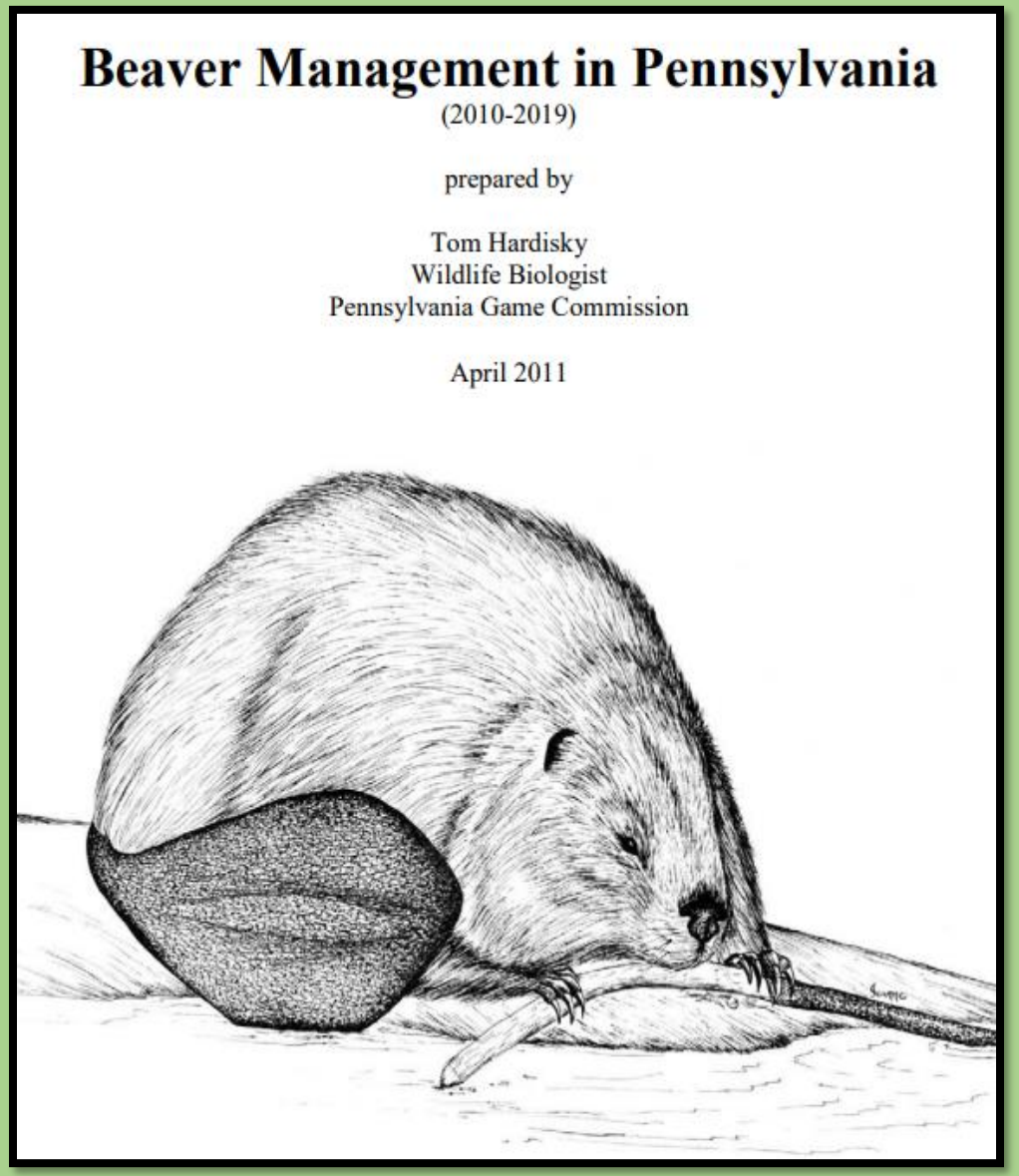


Examples of State Beaver Management Plans (SBMP)

Pennsylvania – Adopted in 2011 by the Game Commission

- Acknowledges Native American cultural values and "respect for beaver was replaced by European greed over a 300-year period . . . that nearly wiped out" U.S. populations.
- The plan "provides the necessary direction":
  - to achieve **enhanced population**, habitat and harvest monitoring;
  - Improved beaver damage understanding, tolerance, and **problem resolution**;
  - **Increase public awareness** of beaver benefits.

"*Only through careful planning and sound science will we maintain a healthy balance between beaver and humans.*"



Summary – What approaches seem to be most Effective?

Overarching Goal: *Keep beaver in place when possible (**coexistence**) by responding timely to conflict complaints and to support/improve watershed health via beaver-related restoration*

➢Coordinated Plan developed by State Wildlife Agency with robust public process & stakeholders involvement

➢SBMP Key Strategies:

- **Support coexistence education/implementation**:
  - Coordinate with tribes, DOTs, state & federal land mgt agencies, local govts, and agriculture groups to provide coexistence options and training
- **Support natural recolonization & relocation**:
  - **restore historic beaver habitat** to support natural recolonization
  - **identify best relocation areas -** where beaver need help to return due to no or low populations but conditions will support their survival (good veg & water conditions etc).
  - **review trapping regulations** – may need some changes:
    - Allow for temporary closures in restoration areas
    - Require permits for killing nuisance beaver – provide non-lethal options info; track the numbers
- **Support research & monitoring** – of gaps in knowledge, BMPs

Photo by Jackie Corday