

Damn Beaver Dams: Living Alongside Nature's Engineers

The Land Conservancy of McHenry County
Midwest Beaver Management
Illinois Beaver Alliance



Introductions

- The Land Conservancy of McHenry County
- Midwest Beaver Management
- Illinois Beaver Alliance



A Brief History Lesson

- We have ecological amnesia
- Pre-colonization, rivers looked completely different
- Complex river-wetland corridors



View of Hennepin wetland restoration, property of
The Wetland Initiative.

All About Beavers

Beaver recovery is due to their adaptability to a range of climates and food sources.

- Diet: Rotational grazing
- Social arrangements
- Dam building



Diet: Rotational Grazing



- Beavers eat cambium and other vegetation
- Illinois topography and soils lends itself to longer occupancy of a site.

Social Arrangements



Photo: Mike Digout

- Colony size ~5 to ~10
- Control litter size based on food supply
- Dispersal range average 9 miles
- Dispersal period has high mortality rate
- Family works together

Why Beavers Dam



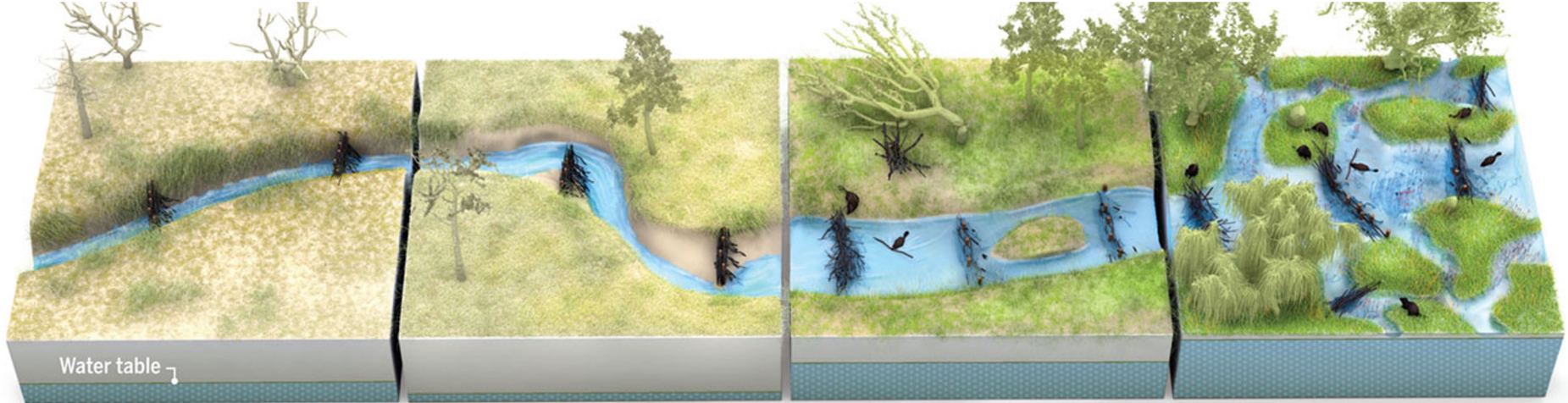
- Maintain water level year round
- Create wetland/ideal habitat
- Ensure/increase access to food supplies
- Deeper pools help protect them from predators

Beaver Benefits

Beavers and the wetlands they create provide many beneficial ecosystem services for the land.

- Create complexity
- Increase drought resilience
- Sediment storage
- Remove nutrient pollution
- Increase floodwater storage capacity
- Provide corridors and connectivity

Beavers = Complexity



Adding dams

Beaver trapping and overgrazing have caused countless creeks to cut deep trenches and water tables to drop, drying floodplains. Installing BDAs can help.

Widening the trench

BDAs divert flows, causing streams to cut into banks, widening the incised channel, and creating a supply of sediment that helps raise the stream bed.

Beavers return

As BDAs trap sediment, the stream bed rebuilds and forces water onto the floodplain, recharging groundwater. Slower flows allow beavers to recolonize.

A complex haven

Re-established beavers raise water tables, irrigate new stands of willow and alder, and create a maze of pools and side channels for fish and wildlife.

Beavers Can Protect Against Drought

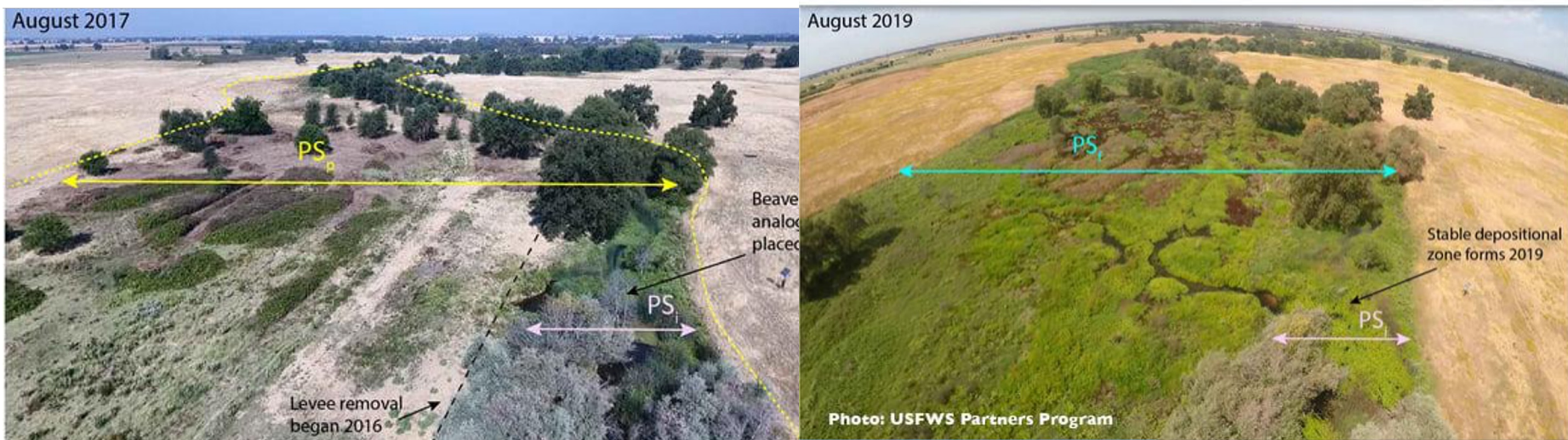
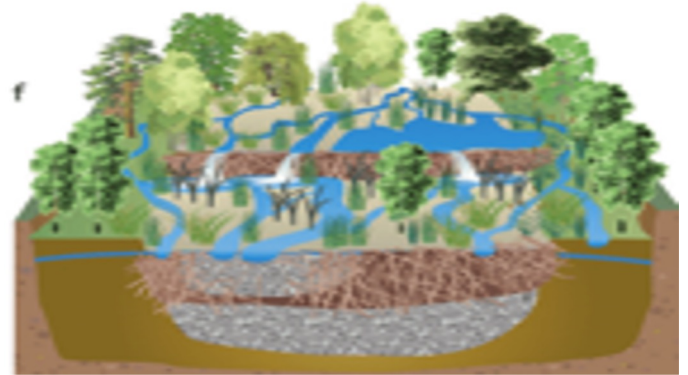
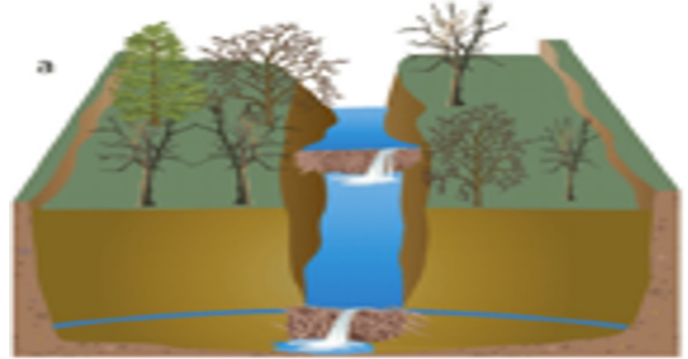


Image: Doty Ravine Preserve in California, Placer Land Trust, before and after process-based restoration, U.S. Fish & Wildlife Service.

Sediment: Slow It, Spread It, Sink It

- Beaver ponds slow the water
- Deposition raises streams beds
- Beaver dams cause the stream to meander
- Floodwaters spread out
- Groundwater flow filters water

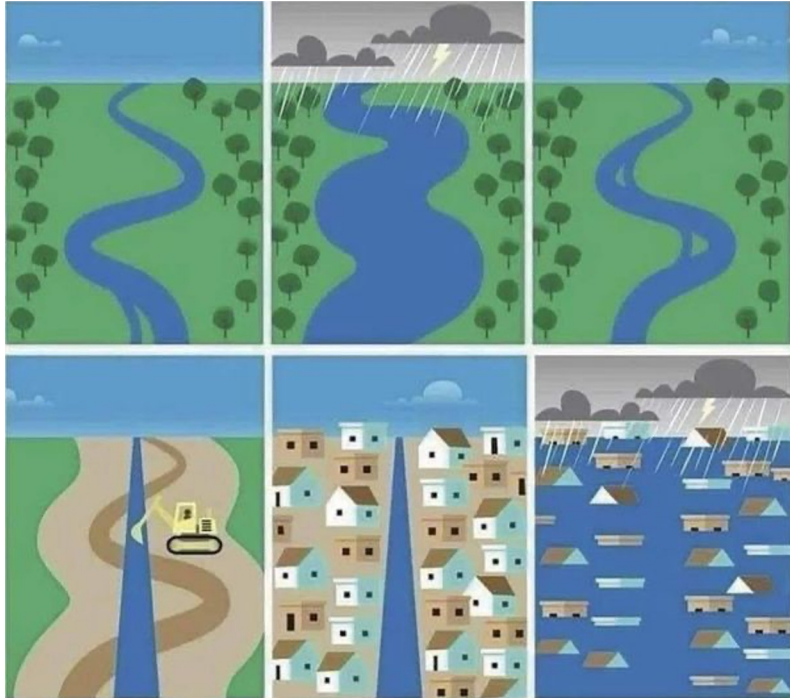


Wetlands Absorb Excess Nutrient Pollution

- Beaver complexes remove excess nitrogen and phosphorus from the water
 - Deposition
 - Uptake by plants
 - Chemical transformation
 - Denitrification
- Slower flow gives these processes time to act



Floodwater Storage Capacity



- Changing precipitation patterns
- Inadequate stormwater infrastructure

Study: Milwaukee River Watershed



2019/2020 BEAVER RESTORATION STUDY

Modeling the Milwaukee River watershed to measure the potential flood mitigation benefits of beaver-created wetlands to restore the natural hydrology and reduce flooding during high water events.



Dr. Qian Liao: Hydrologist and Engineer
Dr. Changshan Wu: Geography and GIS

Modeled the hydrology effects of placing “Beaver Dams” at 52 locations within the watershed,

Computer modeled, Storm events, various lengths of time, 6 hours and 24 hours.

Rain event highs for 5-year, 10-year, 25-year and 100-year events.

Three height elevations:

- ½ Meter
- 1 Meter
- 1-1/2 Meters

Wetlands Increase Biodiversity



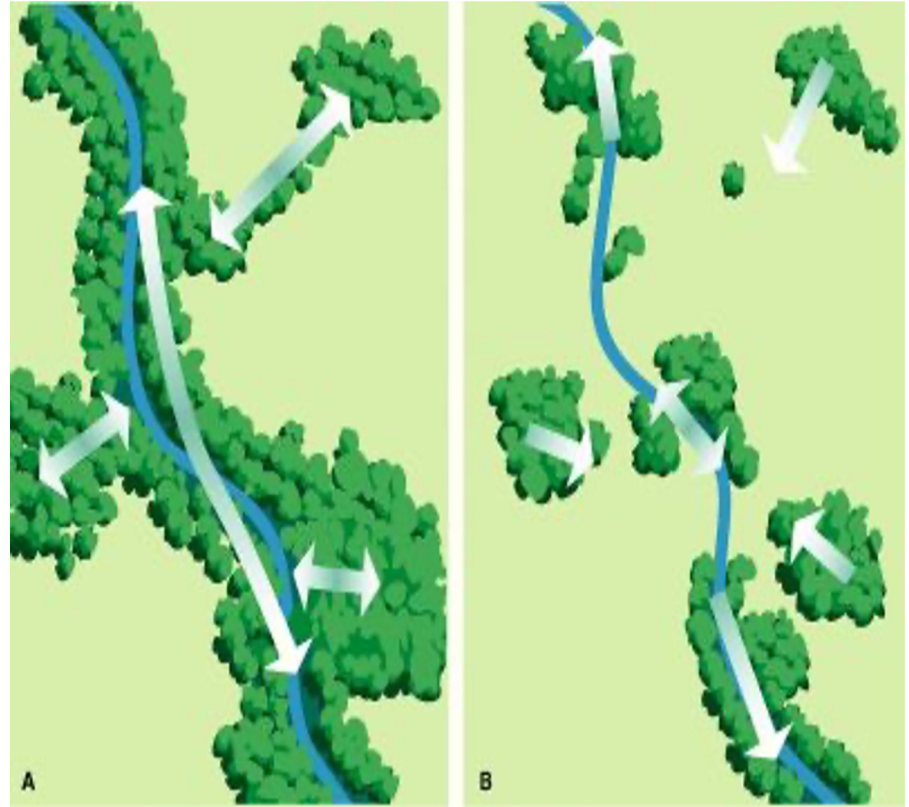
Why biodiversity is important: stability and health of the ecosystem

A number of endangered species in Illinois would benefit from more wetlands



Corridors and Connectivity

- Riparian buffers provide a natural pathway for wildlife



Beaver Restoration

- Low-tech, process-based river restoration
- Inexpensive and scales up easily
- Low carbon footprint
- Beaver restoration is taking place around the country

Riparian Restoration

- Remove invasive vegetation
- Replace with native vegetation--especially beaver favorites
- An affordable option: Live staking



USDA NRCS Conservation Stewardship Program E643D

- State specific guidelines
- LTPB restoration to enhance floodplain connectivity
- BDAs
- Follow the conservation planning process and stream restoration guidance outlined in the Low-Tech Process- Based Restoration of Riverscapes Design Manual
- Applicable land use: Range, Pasture, Forest, Associated Ag Land



United States Department of Agriculture

CONSERVATION ENHANCEMENT ACTIVITY

E643D

CONSERVATION
STEWARDSHIP
PROGRAM

Low-tech process-based restoration to enhance floodplain connectivity

Conservation Practice 643: Restoration of Rare or Declining Natural Communities

APPLICABLE LAND USE: Range, Pasture, Forest, Associated Ag Land

RESOURCE CONCERN: Animal

ENHANCEMENT LIFE SPAN: 1 Year

Enhancement Description

Beaver Dam Analogues (BDAs) and/or Post-Assisted Log Structures (PALS) are low-tech structures used to facilitate process-based restoration of rare and declining 'Stage 0' stream conditions. These structures are used to mimic, promote, and sustain the natural processes of beaver dam activity and wood accumulation that lead to more fully connected floodplains. BDAs and PALS are hand-built with a mixture of woody debris and on-site soils and vegetation. This enhancement is intended primarily to kick-start natural ecological,

Available Resources for Beaver Restoration

The Beaver Restoration Guidebook

Working with Beaver to Restore Streams, Wetlands, and Floodplains

Forestry 282, March 22, 2023



Photo credit: USFWS, A. Ross Foundation (myrtlebeaver.org)

Prepared by

US Fish and Wildlife Service
National Oceanic and Atmospheric Administration
University of Saskatchewan
US Forest Service
Woodcraft

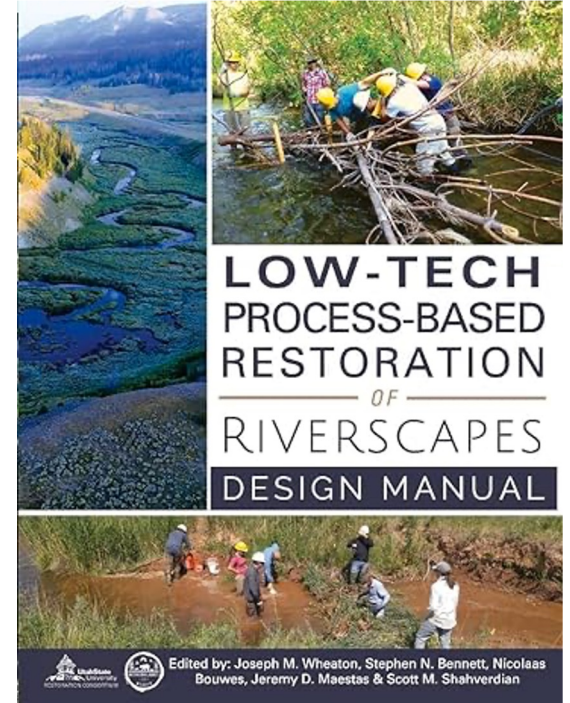
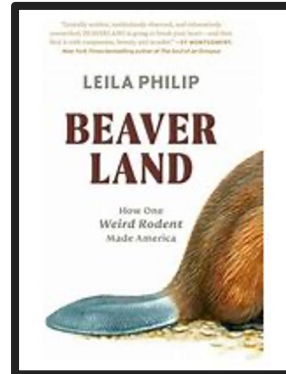
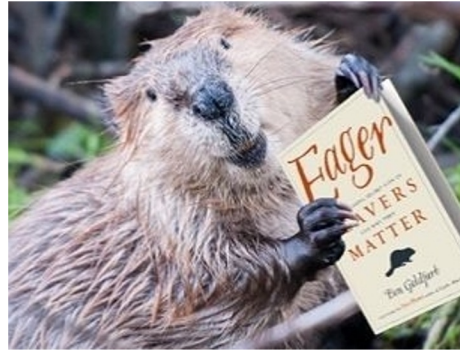
Janine Castro
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Karl

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North Pacific Landscape Conservation Cooperative



Version 1.02. See the full version at <http://www.fws.gov/pnw/conservation/ndc/ndc-guidebook>



Beaver Restoration Around the Country



Western Environmental Law Center

Advocates applaud “Beaver Believer Bill” champ as it heads to governor for expected signature

Jun 22, 2023 | [News Release](#)

Today, the Oregon Senate passed HB 3464, the “Beaver Believer Bill” 19-5 on a bipartisan vote. The bill now heads to Gov. Kotek to be signed

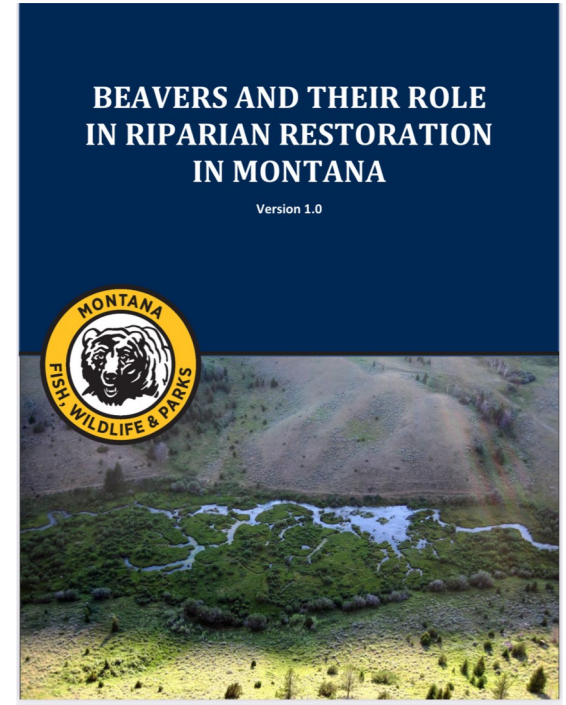


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wildlife.ca.gov



CDFW Releases Beavers into the Wild for First Time in Nearly 75 Years

December 13, 2023



BEAVERS AND THEIR ROLE IN RIPARIAN RESTORATION IN MONTANA

Version 1.0



Managing Beaver Conflicts Nonlethally

Major areas of conflict:

- Flooding caused by blocked culverts
- Tree damage
- Agricultural conflicts

A New Way of Thinking

- Manage beavers nonlethally instead of regarding them as a “nuisance.”
- If a site is suitable for beavers, they will continue to show up.
- Design infrastructure with beavers in mind.
- Adapt our regulatory policies to make it easier to coexist.



Keep All the Tools in Your Toolbelt



Image: Beaver Solutions

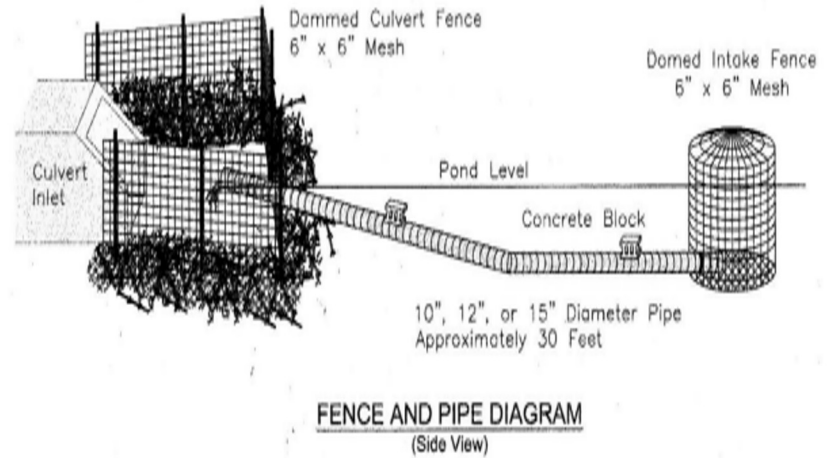
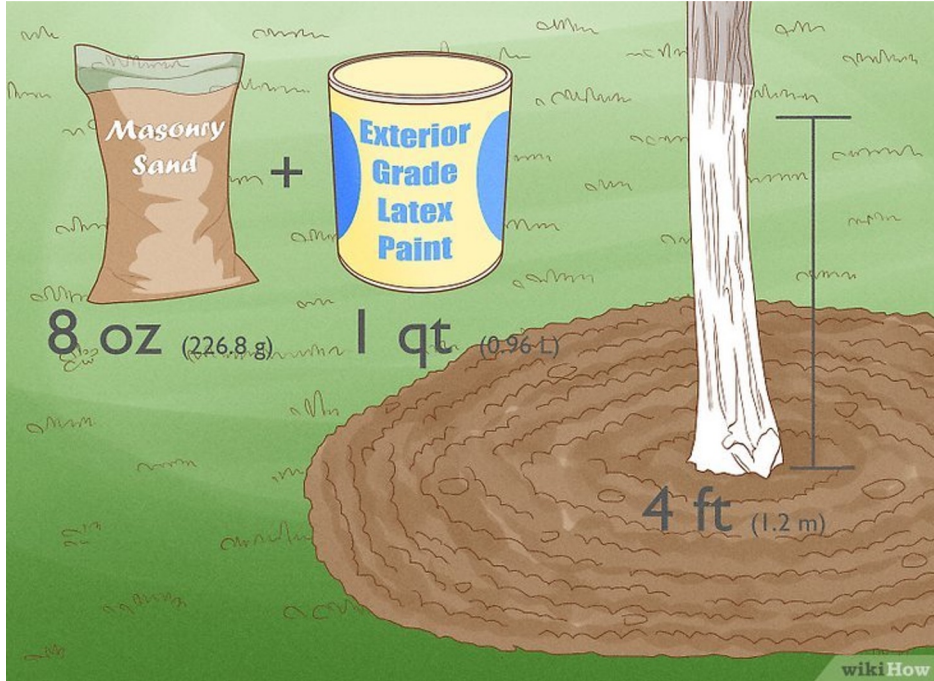


Image: The Beaver Institute

Protect Valuable Trees



Case Studies

Examples of conflicts that are managed nonlethally.



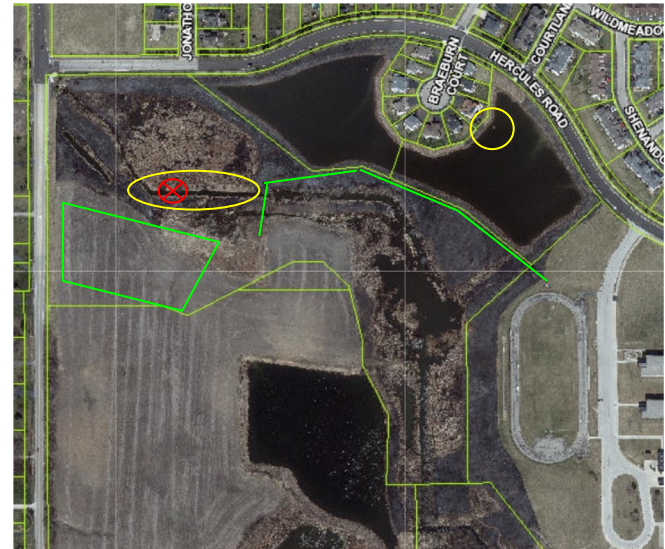
Apple Creek “Beaverland”



1939: landscape a series of wetlands
Creek Beaverland



2008: Apple Creek subdivision

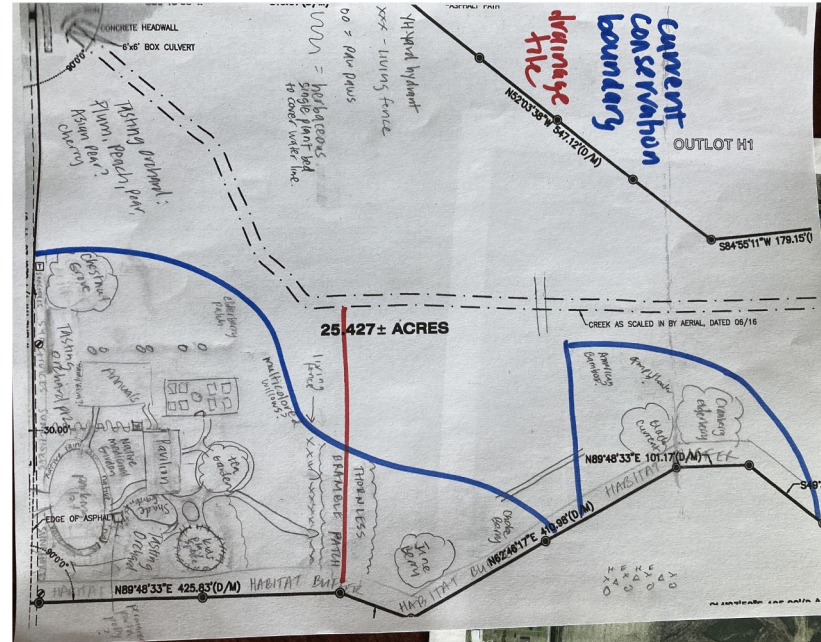


2021: Apple

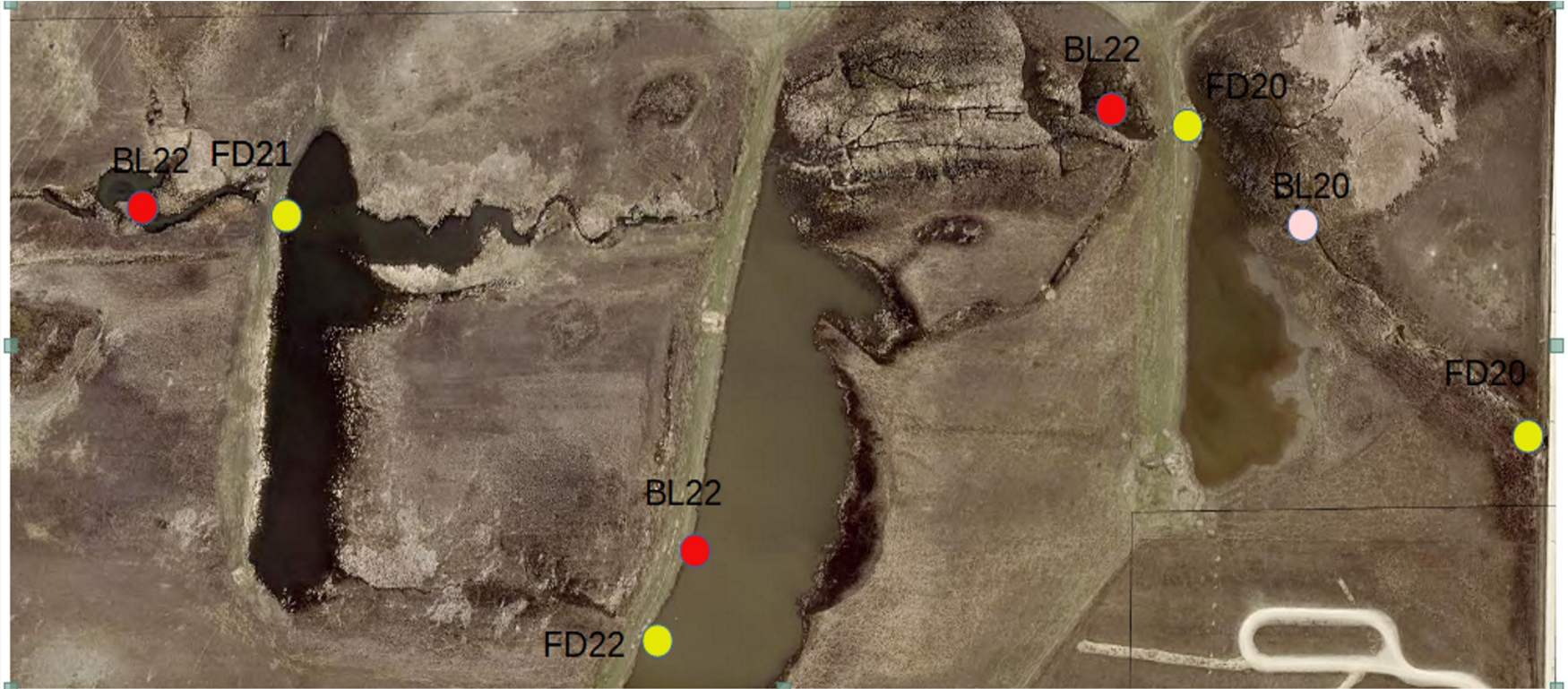
Adaptive Management at Apple Creek



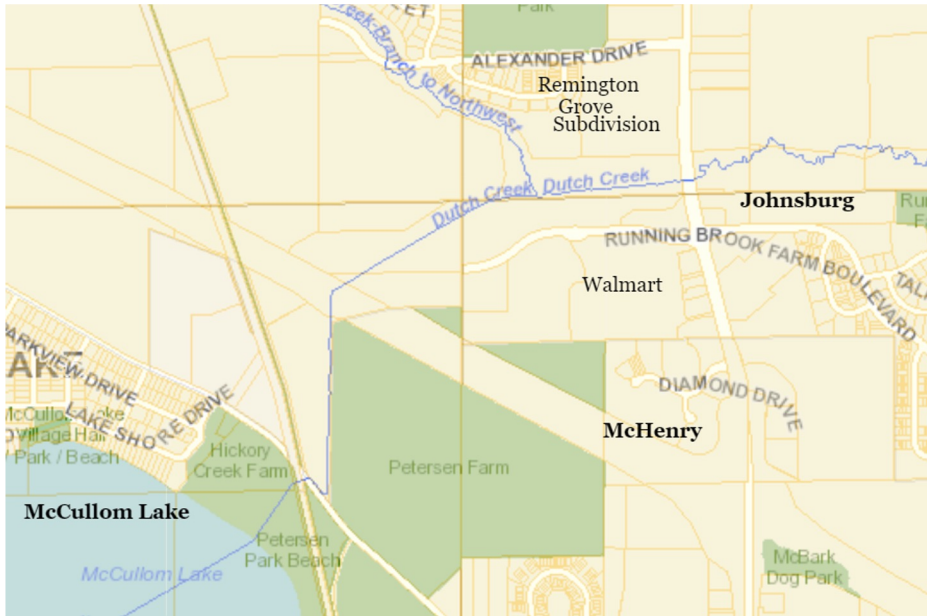
Apple Creek Food Forest: Phase II



The Nature Conservancy's Nachusa Grasslands



Dutch Creek Beaverland



Dutch Creek Beaver Video



The Role of Land Trusts

- Land trusts are already skilled at conserving habitat for wildlife and plants, protecting water quality, tackling climate change, and collaborating with communities.
- Land trusts already work across different land use settings (agriculture, urban, suburban).

On The Forefront

- Join us and become a beaver believer!
- Support streamlining the permitting process for installation of pond levelers and culvert fencing.
- Promote coexistence on the lands you manage.
- Continue learning and stay engaged-- sign up for the Midwest Beaver Newsletter:

<https://www.illinoisbeaveralliance.org/midwest-beaver-advocacy>

Midwest Beaver News

A roundup of recent regional, national, and international beaver news curated for you!

January 2024

Wisconsin Beaver Management Policies Under Review

In November, USDA Wildlife Services announced that they were "preparing an Environmental Assessment (EA) evaluating the environmental impacts of alternatives for our involvement in beaver damage management (BDM) in Wisconsin." Wildlife Services requested "public involvement in the identification of management alternatives and environmental issues to be addressed in the EA and any data, reports, or other information pertaining to the project which should be considered." That opportunity for comment closed on December 20, 2023.

During that time, [Superior Bio-Conservancy](#), [Illinois Beaver Alliance](#), and other beaver advocates drafted a sign-on letter presenting data, scientific consideration, nonlethal conflict management, and alternatives to the current beaver program. Overall, 35 organizations and more than 50 credentialed individuals signed on.

The revised EA is expected to be ready for public review and comment by March 29, 2024. **Stay tuned for more detail on how you can participate in this important action.**

Missed the 2023 Midwest Beaver Summit?

You can still watch the presentations on our YouTube channel! Don't miss out on the opportunity to see what beaver experts like Ben Goldfarb, Leila Phillip, Dr. Emily Fairfax, and Mike Callahan had to say about beavers in our region!

Summit YouTube videos

Questions?



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