



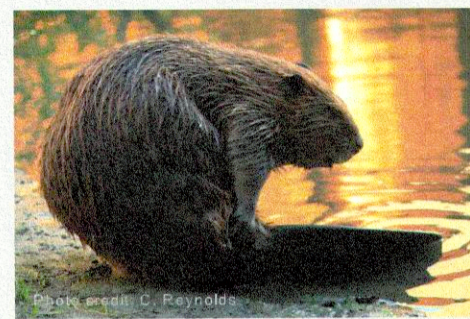
Plan to Increase American Beaver (*Castor canadensis*) Populations at Rio Mora National Wildlife Refuge, NM

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Goals



- Grow beaver population in Rio Mora National Wildlife Refuge to 20
- Improve and expand habitat
- Deter bison from beaver habitat

Background

US conservation status: Stable

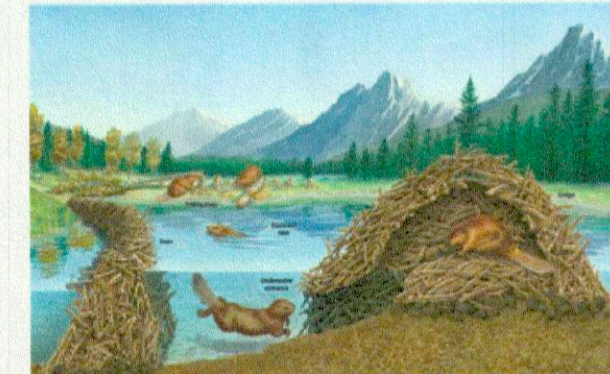
NM conservation status: Greatest conservation need

Habitat: Riparian

Diet: Cambium layer of willow, alder and poplar trees

Family: Sexually mature at 20-24 months. Typical annual litters are 4-6 kits. Colonies consist of parents, and current and previous year kits.

Behavior: Use sticks, rocks, and mud to create dams and lodges in shallow streams. Beavers are mostly nocturnal.



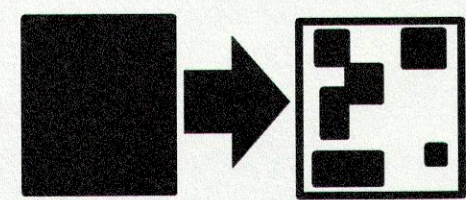
Ecological Importance

A higher incidence of beaver dams on the Rio Mora will restore hydrologic, geomorphic and ecological functions.

- **Hydrologic benefits:** decreased water velocity, increased water storage.
- **Geomorphic benefits:** increased sediment deposition, increased river meandering.
- **Ecological benefits:** wetland creation, biodiversity enhancement, increased habitat complexity and heterogeneity.



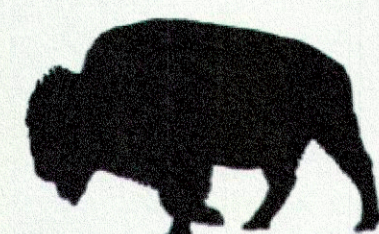
Threats



Habitat fragmentation



Human development



Bison interference

Action 1: Map, plant and protect tree resources to increase beaver forage

Rationale: Mapping is needed to assess current tree resources, and planting will increase habitat connectivity in sparse areas. Planting will also help support a larger beaver population.

Plan:

- Map out canopy cover to identify priority areas for planting along a 30m buffer zone from the river
- Plant willow, cottonwood and alder saplings
- Tag saplings
- Add protective wire fencing around saplings

Monitoring: Remove fencing once saplings reach a trunk diameter of 10cm. Record evidence of beaver foraging.

Materials: tags, measuring tape, tree saplings, shovel, Landsat imagery.

Cost: ~\$6,000 over 5 years

Funds: Native Plant Society of New Mexico grant, USDA Collaborative Forest Restoration Program

Stakeholders: Rio Mora National Wildlife Refuge, Denver Zoo, Highlands University, Regis University

Action 2: Connect, protect and expand beaver habitat through conservation easements

Rationale: Habitat expansion and protection on the Rio Mora is needed to support and promote larger beaver populations.

Plan:

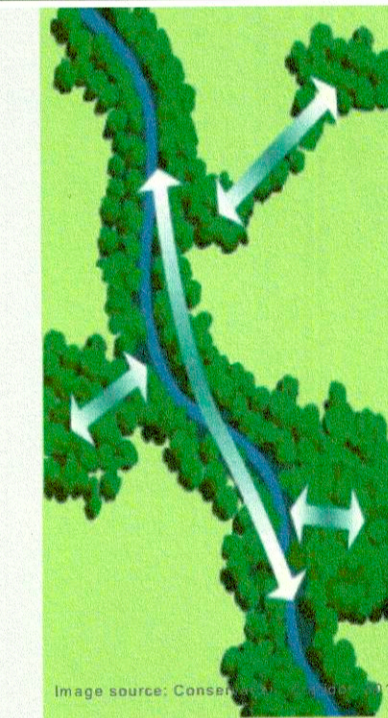
- Contact conservation agencies to discuss easement options
- Contact surrounding landowners in person and/or by mail to assess attitudes towards beavers
- Introduce easement options and habitat connectivity goals to landowners
- Assess interest and assist in easement enrollments.

Monitoring: Ensure easement compliance, continue to promote enrollment by mailing informational pamphlets, hold annual meetings to discuss action's success and answer questions.

Cost: ~\$16,000 over 3 years

Funds: USDA Conservation Reserve Program, The Nature Conservancy, and local grants for watershed improvement, New Mexico Land Conservancy

Stakeholders: Surrounding private landowners, Rio Mora National Wildlife Refuge, New Mexico Department of Game and Fish



Action 3: Assess bison impact on preferred beaver resources

Rationale: Bison wallowing, trampling and browsing may be affecting tree resource availability for beavers along the banks of the Rio Mora.

Plan:

- Survey bank area of the Rio Mora (up to 30m on both sides) for bison scat, browsing, and trampling activity
- Record all tree species affected
- Record beaver slides, tracks, dams, lodges and felled trees
- Compare data to identify areas where both species use the same resources, and identify areas where beavers are limited by bison presence
- This study would be performed biannually for 2 years

Materials: GPS, analytical software

Cost: ~\$9,000

Funds: Grant from US Fish and Wildlife: Wildlife Refuge System Enhancements

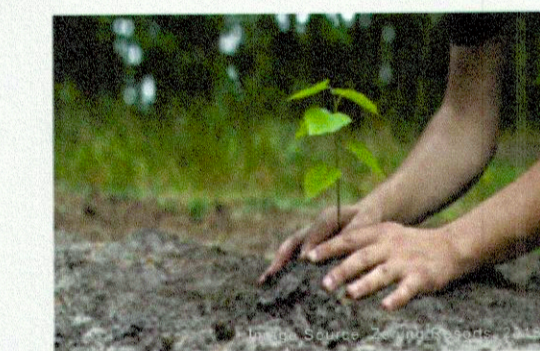
Stakeholders: Pojoaque Tribe, Rio Mora National Wildlife Refuge, Denver Zoo



Knowledge Gaps

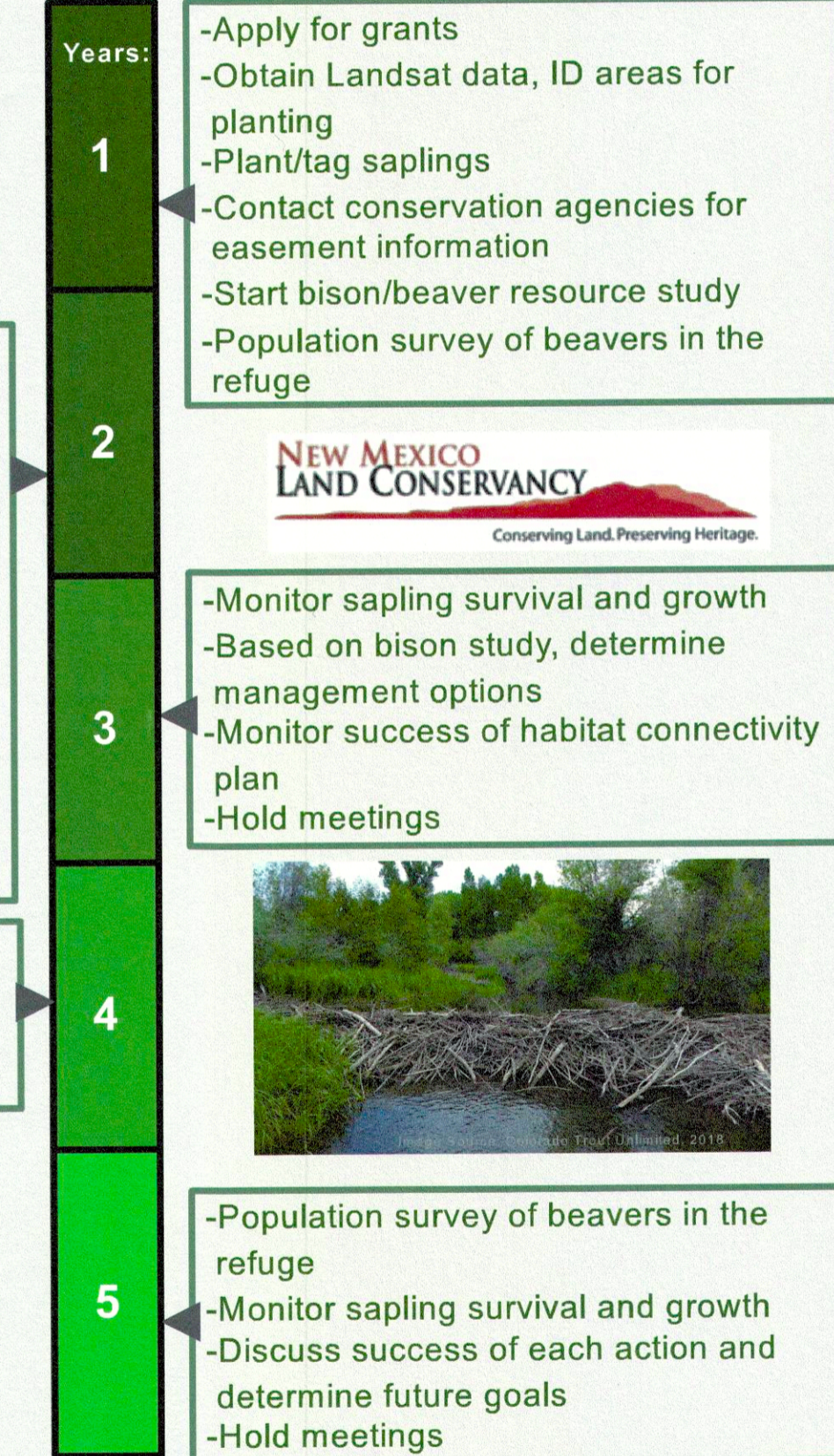
- Current beaver population in Rio Mora National Wildlife Refuge
- Stakeholder opinions: beavers are often considered pests
- Current viability of upstream/downstream habitat

Timeline



- Contact surrounding landowners
- Assess landowner beaver perception
- Create informational material and distribute
- Hold meetings
- Help with easement enrollment process
- Monitor easement compliance
- Monitor sapling survival and growth
- Finish bison/ beaver resource study

- Monitor easement compliance
- Hold meetings
- Monitor sapling survival/tree density



Acknowledgements

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References

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