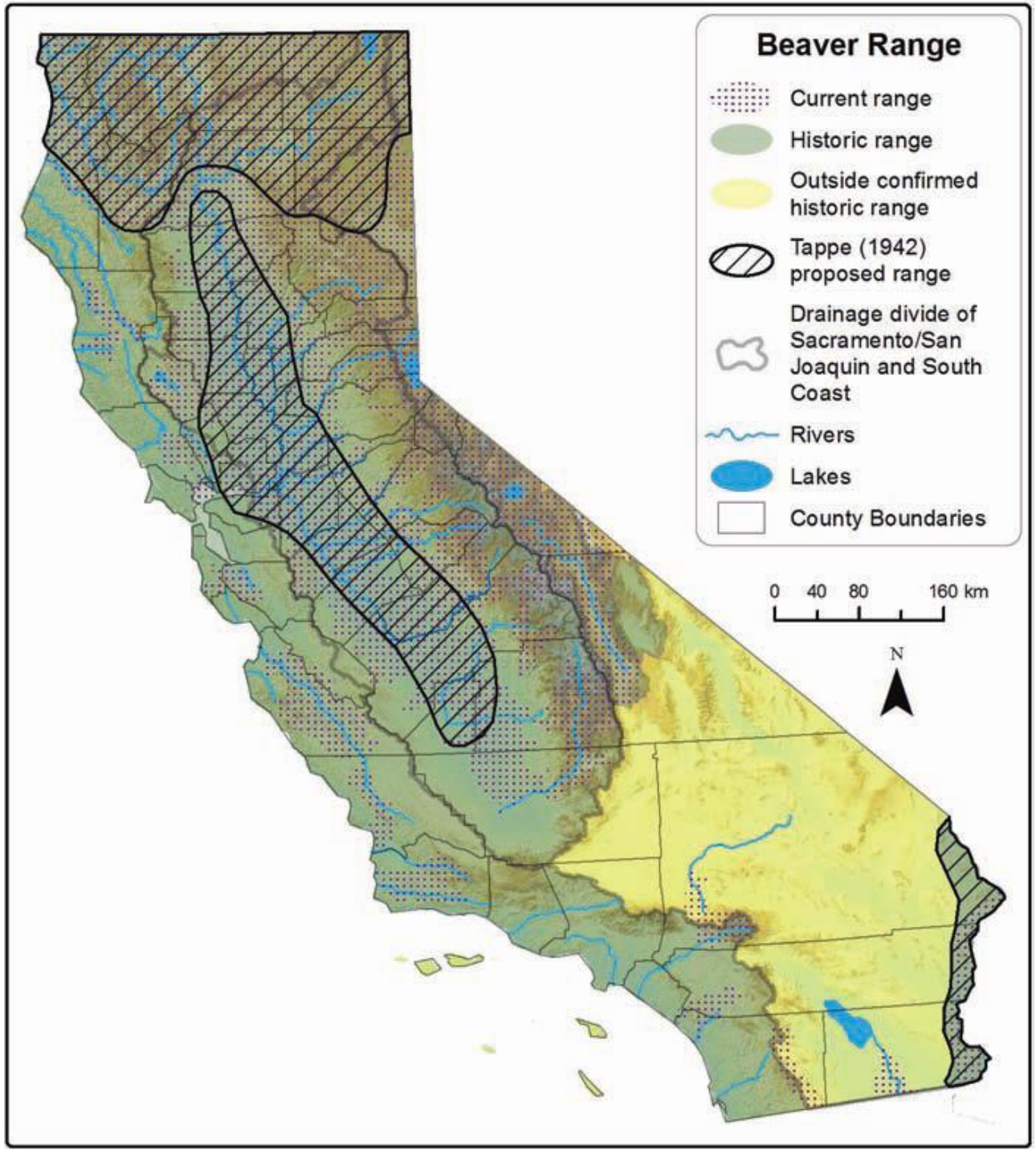
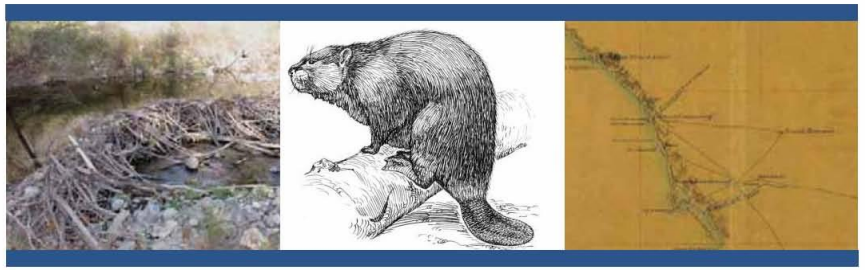
# Bring Back the Beavers




# THE HISTORIC RANGE OF BEAVER IN THE NORTH COAST OF CALIFORNIA: A REVIEW OF THE EVIDENCE



Prepared for:

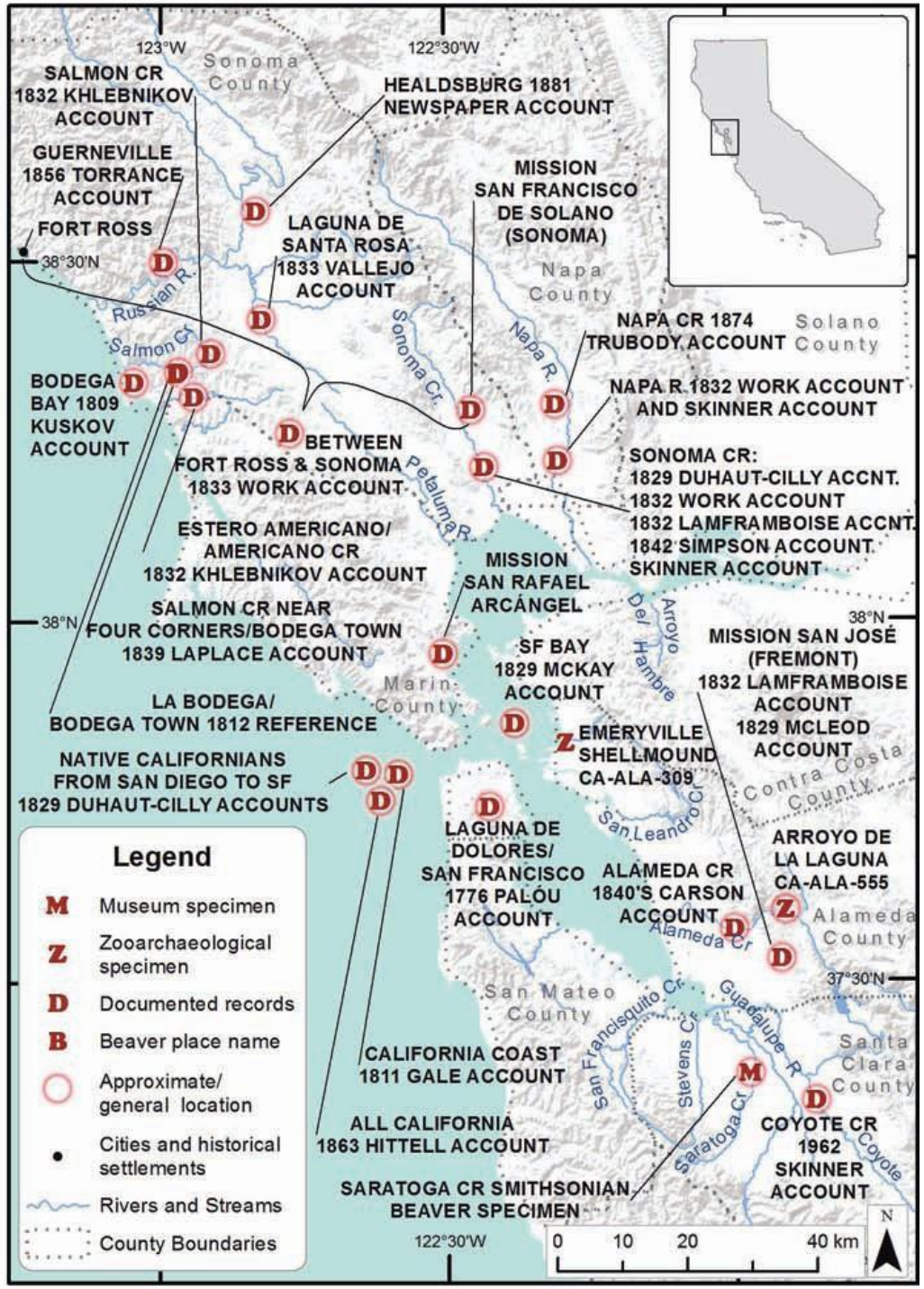
The Nature Conservancy

By:

The Occidental Arts and Ecology Center WATER Institute

December 2013

WATER INSTITUTE
OCCIDENTAL ARTS & ECOLOGY CENTER




California Fish and Wildlife 107(2):89-98; 2021 www.doi.org/10.51492/cfwj.107.8

FULL RESEARCH ARTICLE

# Western Message Petroglyphs indicate historic beaver presence in a San Francisco Bay Area watershed

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Recent museum, archaeological, and observer record evidence suggests that North American beaver (*Castor canadensis*) were historically native to the watersheds of California's coast, including San Francisco Bay. A wide variety of animals are abundantly represented in Native American petroglyphs and pictographs with their representations fulfilling intentions ranging from the mundane to ceremonial and mythological purposes. However, beaver symbols are poorly represented in California rock art and absent from the San Francisco Bay Area. A novel record, in the form of Western Message Petroglyphs, suggests that a beaver lodge was present in the late nineteenth century in the Alameda Creek watershed, potentially the last evidence of beaver prior to their extirpation in the region by the fur trade.

**Key words:** Alameda Creek, beaver, California, *Castor canadensis*, historic range, rock art, San Francisco Bay, Western Message Petroglyphs

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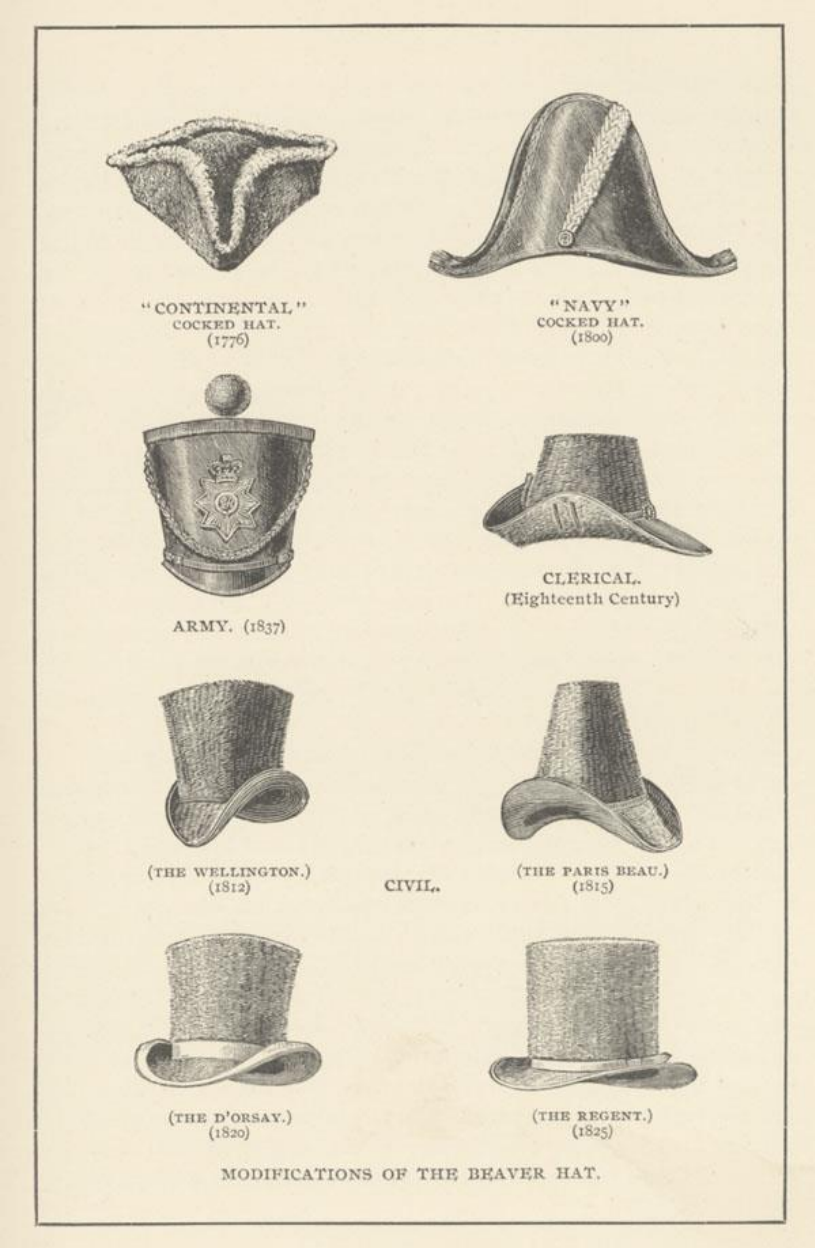
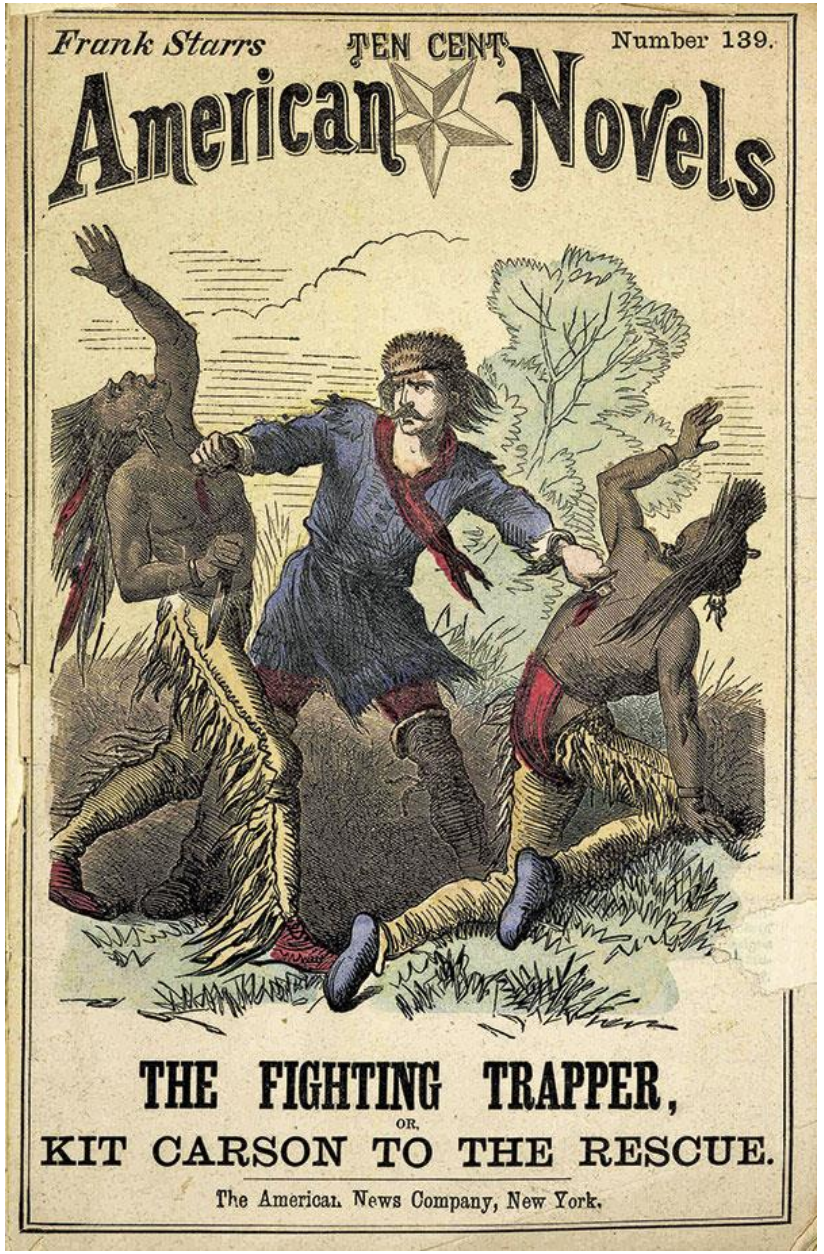
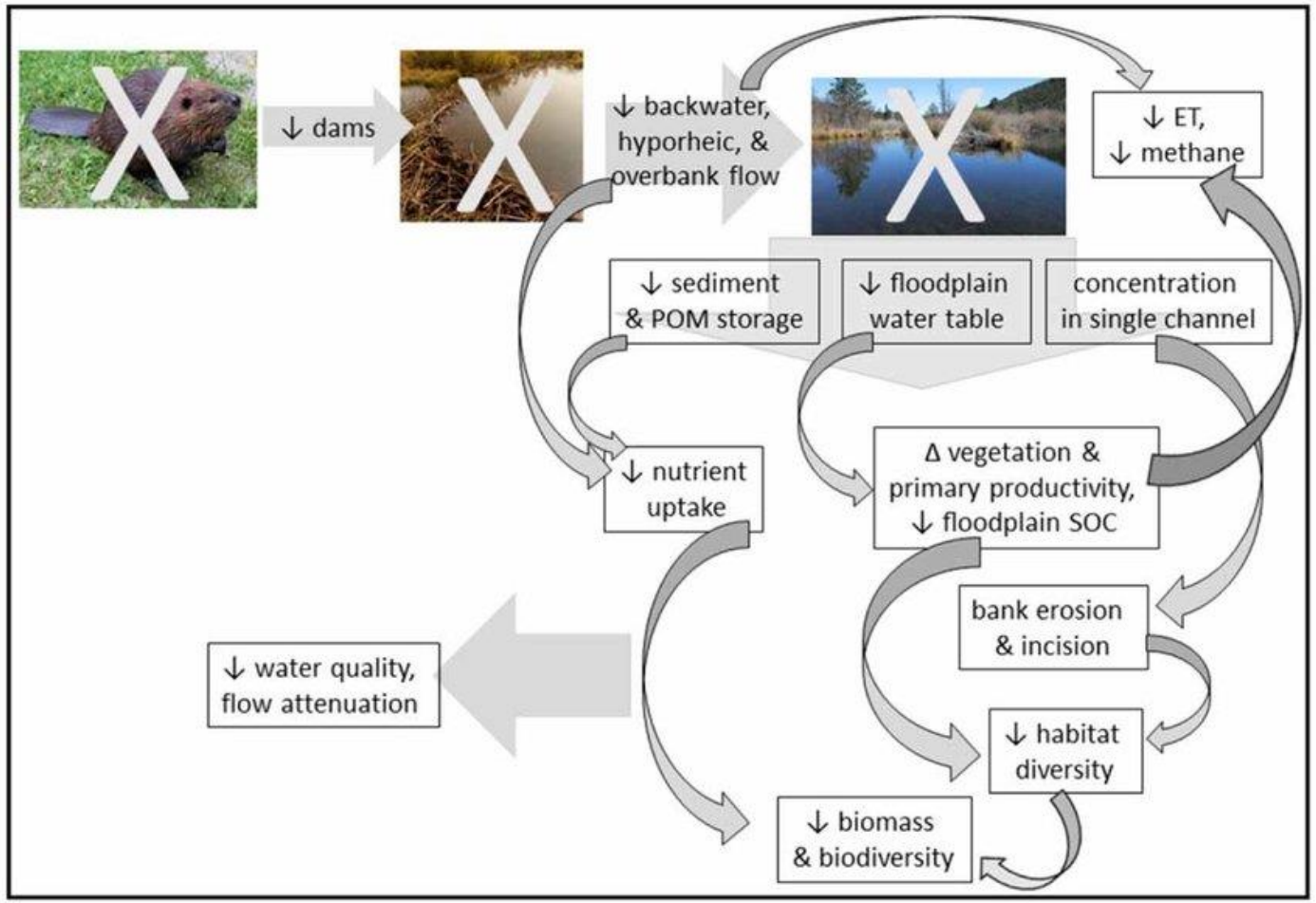
Until recently, the historic range of the beaver (*Castor canadensis*) in California was described as restricted to the watersheds of the Central Valley below 305 m (1,000 ft), the Klamath and Pit River watersheds of furthest northern California, and the Colorado River mainstem in the extreme southeast border of the state (Zeiner et al. 1990). This work cited the claims of early twentieth century zoologists (Grinnell et al. 1937; Tappe 1942) and may have reflected "shifting baselines syndrome" (Pauly 1995) whereby scientists accept as a baseline species occurrence and distribution extant at the beginning of their careers, despite near extirpation of beaver by fur trappers in much of California almost a century and a half earlier. Over the last decade, physical evidence of beaver's nativity to the high Sierra Nevada and the watersheds of coastal California, including the San Francisco Bay Area, led to recognition of a pre-fur trade distribution of beaver throughout the state (James and Lanman 2012; Lanman et al. 2012, 2013; CDFW 2017). Specific to Bay Area watersheds,




**400 million beavers in North America precolonial**

**By early 1900s only 1,300 beavers in all of California**

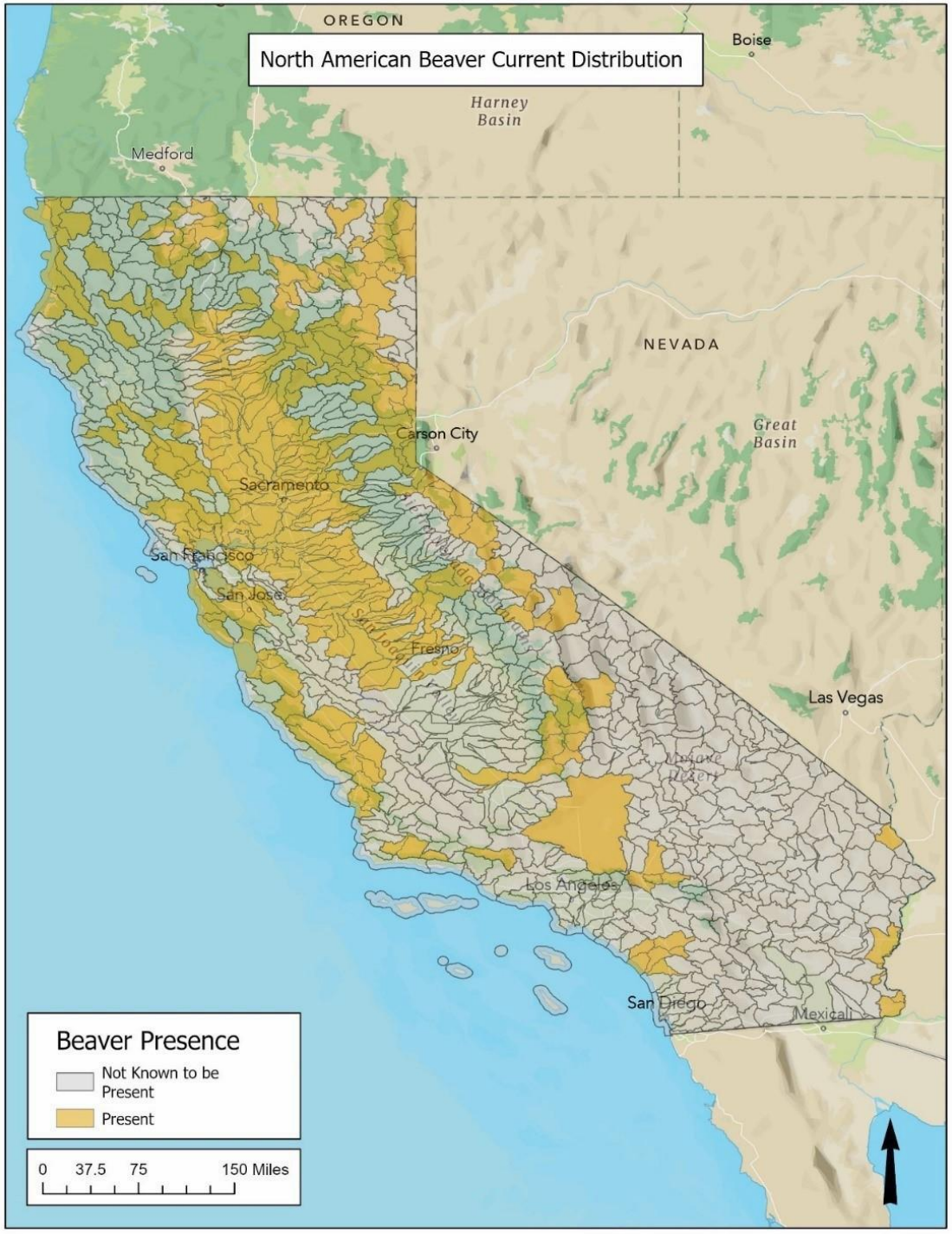


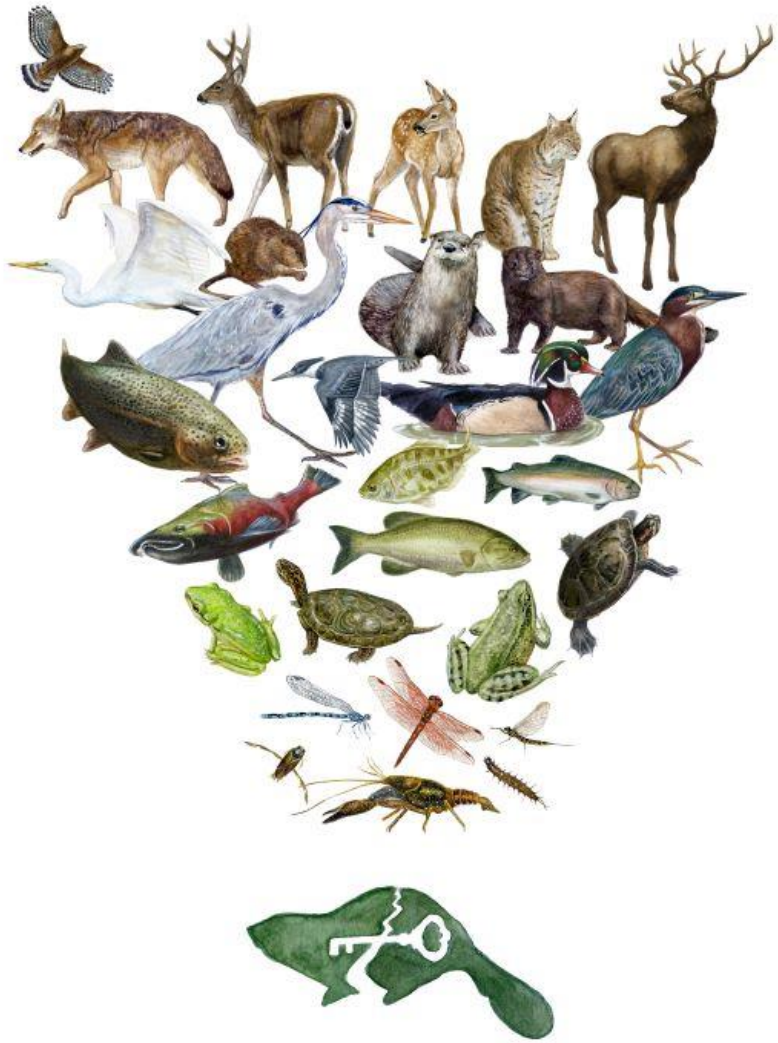

↓ dams
↓ backwater, hyporheic, & overbank flow
↓ ET, ↓ methane
↓ sediment & POM storage
↓ floodplain water table
concentration in single channel
↓ nutrient uptake
Δ vegetation & primary productivity, ↓ floodplain SOC
bank erosion & incision
↓ water quality, flow attenuation
↓ habitat diversity
↓ biomass & biodiversity

**20,000 beavers in California by 1950**

WORTH A DAM

MARTINEZBEAVERS.ORG

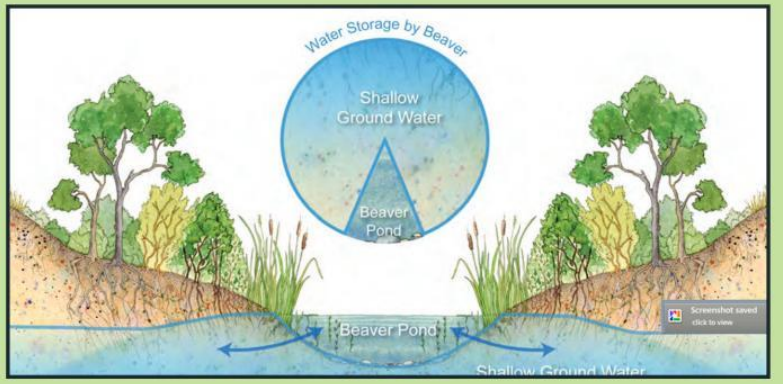

North American Beaver Current Distribution
OREGON
Boise
Harney Basin
Medford
NEVADA
Great Basin
Carson City
Sacramento
San Francisco
San Jose
Fresno
Las Vegas
Los Angeles
San Diego
Mexicali
Beaver Presence
Not Known to be Present
Present
0 37.5 75 150 Miles



"The beaver isn't just an animal:
it's an ecosystem."

www.martinezbeavers.org


# Beavers store water and revive wetlands




BEAVER DAMS SAVE WATER ABOVE AND BELOW GROUND



Beavers & Salmon
Worth A Dam! www.martinezbeavers.


BEAVERS BENEFIT BIRDS

# CLIMATE SUPERHEROES

BEAVER PONDS SATURATE SOIL AND PLANTS, MAKING THEM MORE RESISTANT TO FIRE.

THE WEIGHT OF THE POND BEHIND DAMS FORCES WATER FROM UNDERGROUND, COOLING FISH.


BEAVER PONDS ALLOW WATER TO SOAK IN AND SLOW DOWN. SPEED BUMPS SLOW FLOODING.

BEAVER PONDS ARE SAFE PLACES FOR WILDLIFE TO TAKE REFUGE DURING FIRES.

PLANTS AROUND BEAVER PONDS ARE MORE RESILIENT AND REBOUND MORE QUICKLY.

BEAVER PONDS STORE WATER ABOVE AND BELOW GROUND EVEN DURING DROUGHT.

# North America’s Best Firefighters

# Beavers as active healers

## Nature's water restoration practitioners

Ben Goldfarb Brock Dolman Molly Alves Charnna Gilmore

CENTER for BIOLOGICAL DIVERSITY

Because life is good.

# Lawsuit Launched to Protect Endangered California Salmon Harmed by Federal Beaver-Killing


Los Angeles Times

## It's Good to be a California Beaver. Again.

## New CDFW Policy Recognizes Ecological Value of Beavers in California

California Department of Fish and Wildlife

# CDFW Beaver Restoration Program

Two pilot beaver relocation and restoration projects in Plumas and Tulare Counties

Department of Fish and Wildlife
DEPARTMENTAL BULLETIN

Number: 2023-02
Date Issued: June 5, 2023
Expires: Until Superseded

To: Department of Fish and Wildlife Staff

Subject: Beaver Depredation Policy in California

### Overview and Background

As a keystone species and ecosystem engineer, the North American beaver (*Castor canadensis*) provides ecosystem services that promote biodiversity protection, habitat restoration, and wildfire-resilient landscapes in California, as aligned with the State Wildlife Action Plan (SWAP, 2015) and the state's Natural and Working Lands Climate Smart Strategy (Executive Order N-82-20). Beavers also have an ecological relationship to many species listed under the California Endangered Species Act (CESA; Fish & Game Code (FGC), §2050 et seq.) and/or federal Endangered Species Act (ESA; 16 U.S.C. §§1531-1544). The Department of Fish and Wildlife (Department) is committed to ensuring that humans and beavers can coexist, recognition of their ecological value, and that the removal of any depredation beaver is done in a thoughtful manner.

### Issue Statement

The Policy outlined in this document is intended to implement a deliberative, tiered approach when responding to reported beaver depredation. The Department will promote the use of various nonlethal beaver damage deterrent techniques to resolve depredation conflicts where feasible. This approach is consistent with FGC section 4181, California Code of Regulations (CCR) Title 14 section 401, the CDFW Ecosystem Services Policy (DB 2017-06), and the Fish and Game Commission Policy on Depredation Control. Therefore, we are providing the following direction for all beaver depredation permits issued in the state. Authorizing the removal of beaver dams is beyond the scope of this policy and may require federal, state, and/or local authorizations (e.g., FGC section 1602 agreement, FGC section 1610 emergency notification, CESA Incidental Take Permit).

## Beaver Restoration Project Proposal Form
Beaver Restoration Program

**Project Proposal ID (CDFW use):** _____

**LANDOWNER INFORMATION**

| | Landowner* | Land Manager** (if applicable) |
|---|---|---|
| Name | | |
| Tribe/Organization (if applicable) | | |
| Mailing Address | | |
| City, State, Zip | | |
| Primary Phone | | |
| Cell Phone | | |
| Email | | |

*If proposing a collaborative project involving multiple landowners, provide the primary contact here and additional landowner information via the "Additional project information" spreadsheet.
**If applying on behalf of a landowner, provide landowner's contact information as well.

**PROPERTY INFORMATION** (provide the parcel number(s)/county for the property included in the project. If more than 10 parcels, use "Additional project information" spreadsheet.)

| Tax APN | County | Tax APN | County |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

1. **Property type:** ◯ Private ◯ Public

2. **Primary land use:**

CDFW Beaver Restoration Program
P.O. Box 944209, Sacramento, CA 94244
BeaverRestoration@wildlife.ca.gov

Version 03/2025 1

## Status Report on Beaver Restoration Pilot Projects
**California Department of Fish and Wildlife**
**Beaver Restoration Program**
**April 2025**

### Introduction

As part of Governor Newsom's *Initiative to Expand Nature-Based Solutions*, in 2022 the California Department of Fish and Wildlife (CDFW) was tasked with creating a Beaver Restoration Program (Program) to support habitat restoration and species conservation, restore ecosystem function, and improve climate change, drought, and wildfire resilience throughout California. The Program's mission is to gather a comprehensive understanding of where, when, and how beavers can be utilized to restore ecosystem processes and habitats in California, communicate those findings in clear and meaningful ways, and with that knowledge, effectively utilize beavers as a nature-based solution in restoring and conserving habitats and watersheds for the species under CDFW's purview.

Implementation of the Program includes:

- Conducting beaver restoration projects (via beaver translocation) on private, public, and tribal lands for a suite of ecological objectives, as well as to support re-establishment of beaver populations on tribal lands
- Supporting non-lethal management of human-beaver conflicts through the use of non-lethal deterrents or translocation, where feasible options for either exist
- Developing a Beaver Management and Restoration Plan, which guides California's beaver restoration activities, justifies the Program's processes for decision-making and project prioritization, identifies potential constraints, and highlights needs for research and additional information

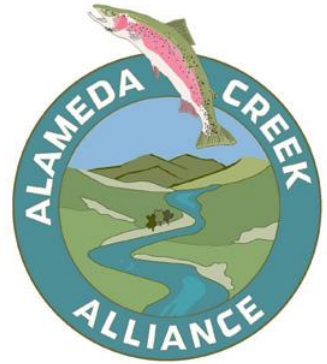
While development of California's Beaver Management and Restoration Plan is underway, the Program is implementing beaver restoration pilot projects to facilitate development of the Program's translocation protocols and procedures, create the process for project development and implementation, and establish the mechanisms for identifying conflict beavers to translocate into restoration project sites.

In collaboration with the Maidu Summit Consortium and Tule River Tribe, in 2023-2024 the Program initiated two beaver restoration pilot projects (Figure 1). These projects represent two distinctly different beaver restoration scenarios:

- Tásmam Koyóm (Humbug Valley, Plumas County): This project location exhibits highly suitable, low-gradient meadow habitat, that is characterized by a moderate abundance of woody vegetation for dam-building, abundant deep pool habitat, abundant cattail and willow stands for food resources, and soil banks and substrate to allow for burrows and bank lodges. In addition to naturally occurring characteristics, there are several man-made ponds and beaver dam analogs that were previously installed in the system. One resident beaver is known to persist in the local system. Project objectives include increasing wildfire resilience, improving habitat for native biodiversity, and increasing water storage on the landscape. This project represents a high probability of beaver population establishment and subsequent ecosystem-restoring activities,

1


San Francisco
Public Utilities
Commission


ALAMEDA CREEK
ALLIANCE


East Bay
Regional Park District


CALIFORNIA
DEPARTMENT OF
FISH &
WILDLIFE


ZONE 7
WATER
AGENCY

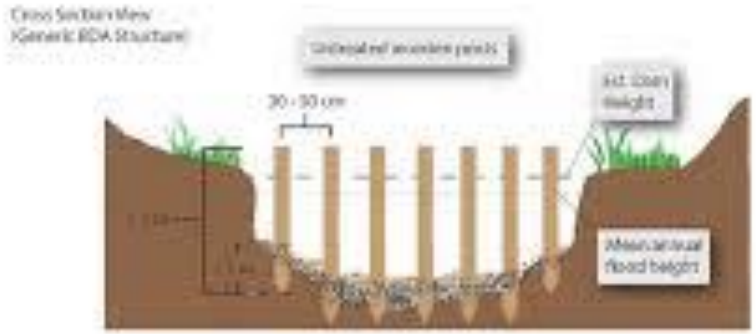

ACWD
ALAMEDA COUNTY WATER DISTRICT


CONTRA
COSTA
RESOURCE
CONSERVATION
DISTRICT


WORTH A DAM
MARTINEZBEAVERS.ORG


NOAA
NOAA
FISHERIES


SOUTH BAY CLEAN CREEKS COALITION
Reclaim Restore Revitalize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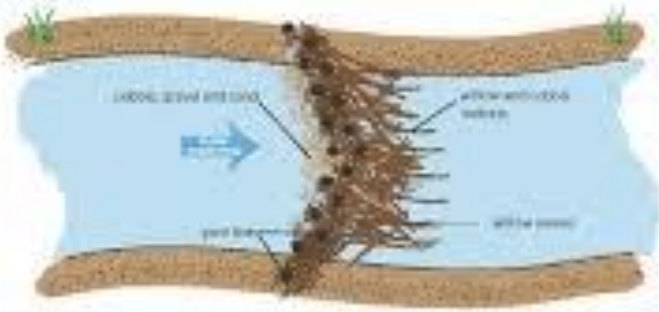
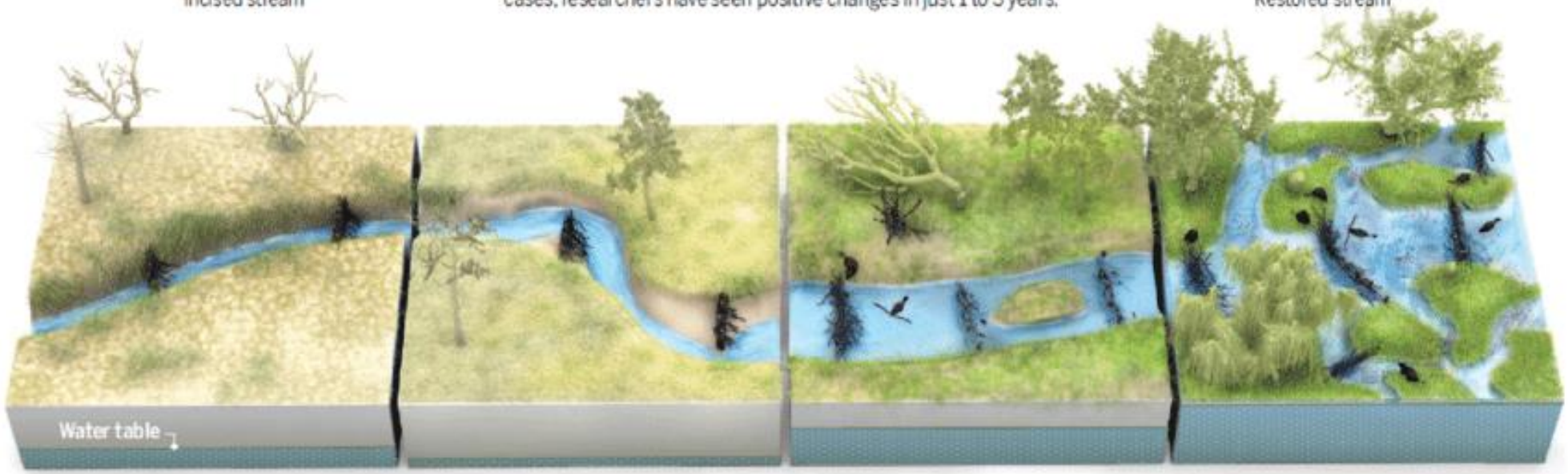


# A stream comes back to life

Across the U.S. West, scientists and land managers are using beaver dam analogs (BDAs) to heal damaged streams, re-establish beaver populations, and aid wildlife. In some cases, researchers have seen positive changes in just 1 to 3 years.

Incised stream

Restored stream

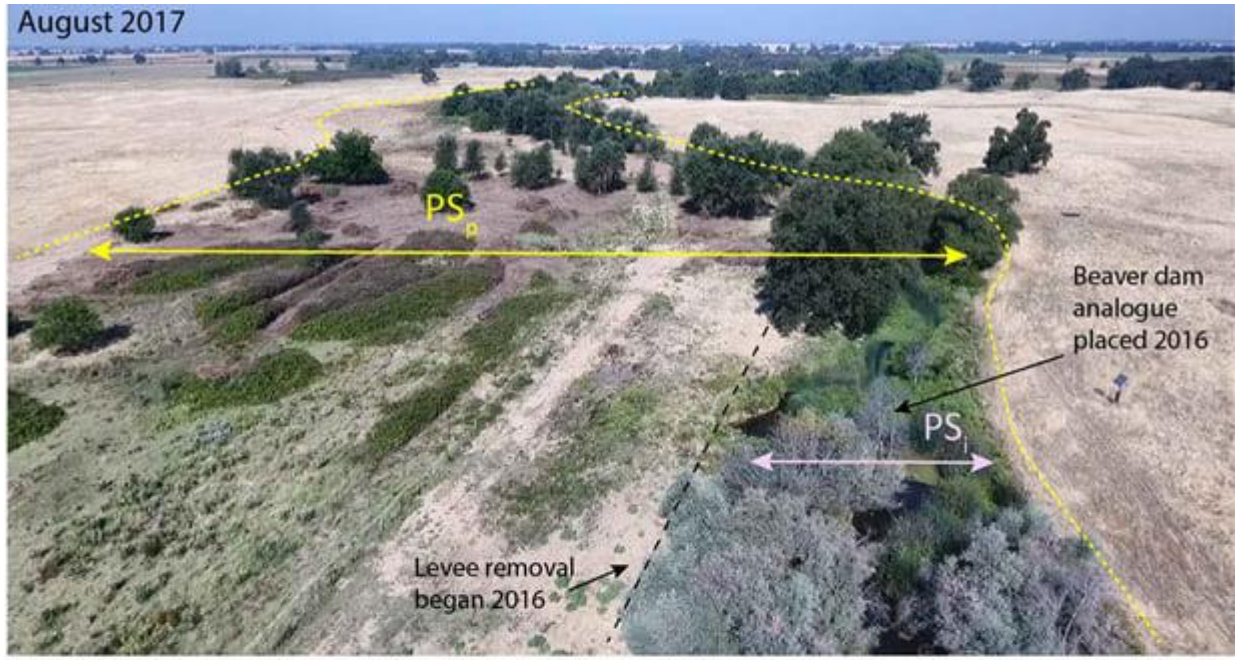



**Adding dams**
Beaver trapping and overgrazing have caused countless creeks to cut deep trenches and water tables to drop, drying floodplains. Installing BDAs can help.

**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.

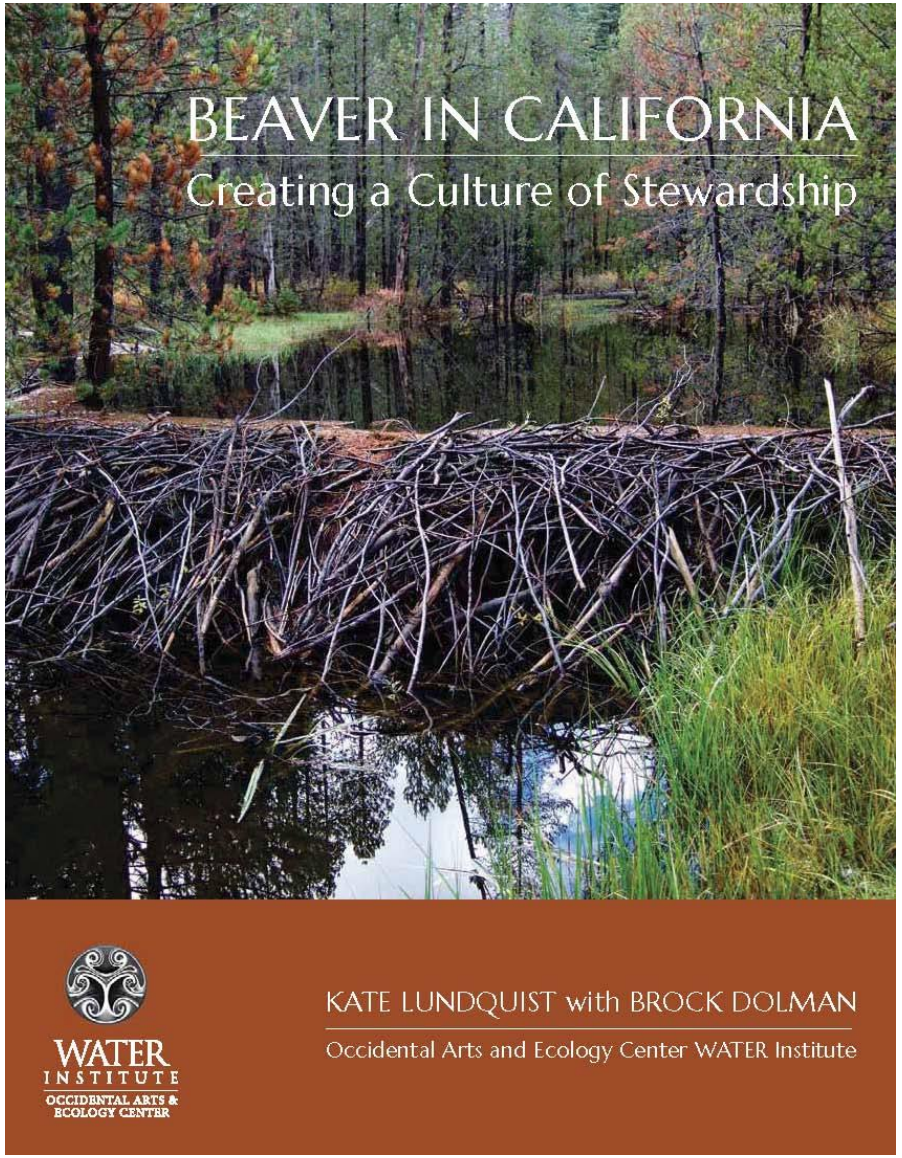
**A complex haven**
Re-established beavers raise water tables, irrigate new stands of willow and alder, and create a maze of pools and side channels for fish and wildlife.

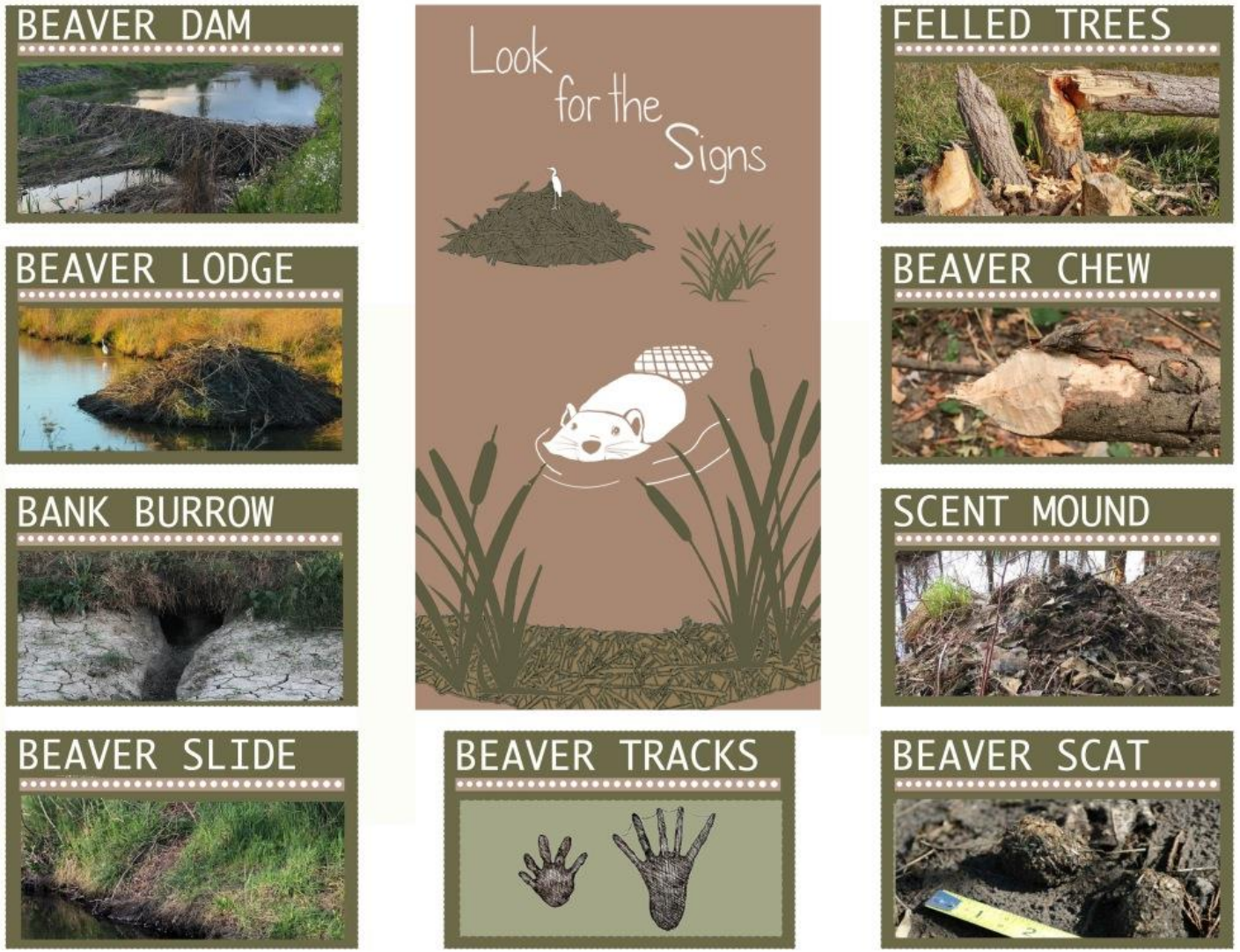



**Placer Land Trust**



California transplants beaver into El Dorado National Forest via parachute in 1950 (Source: CA Dept. of Fish and Wildlife).[16]


BEAVER IN CALIFORNIA
Creating a Culture of Stewardship
WATER INSTITUTE
OCCIDENTAL ARTS & ECOLOGY CENTER
KATE LUNDQUIST with BROCK DOLMAN
Occidental Arts and Ecology Center WATER Institute


BEAVER DAM
Look for the Signs
FELLED TREES
BEAVER LODGE
BEAVER CHEW
BANK BURROW
SCENT MOUND
BEAVER SLIDE
BEAVER TRACKS
BEAVER SCAT

# June 28, 10-3


Worth A Dam presents the 16th Beaver Festival 2025
BEAVER FESTIVAL
LET IT BEAVER!
Please join us!