



May 20, 2022

The Honorable Bob Wieckowski  
 Chair, Senate Budget Subcommittee #2  
 State Capitol  
 Sacramento, CA 95814

The Honorable Richard Bloom  
 Chair, Assembly Budget Subcommittee #3  
 State Capitol  
 Sacramento, CA 95814

The Honorable Nancy Skinner  
 Chair, Senate Budget Committee  
 State Capitol  
 Sacramento, CA 95814

The Honorable Phil Ting  
 Chair, Assembly Budget Committee  
 State Capitol  
 Sacramento, CA 95814

**RE: Strong Support for Proposed Beaver Restoration program at the California Department of Fish and Wildlife (BCP 3600-071-BCP-2022-MR)**

Dear Chairs Wieckowski, Bloom, Skinner and Ting,

As long-time proponents and practitioners of beaver and process-based restoration strategies, we are delighted to support the transformational proposal to create a new Beaver Restoration program at the California Department of Fish and Wildlife (CDFW) in the Governor's May Revision. The proposed program's ambitions and investments recognize that beavers can and do enhance conservation of existing public lands, accelerate regionally led conservation, expand and accelerate environmental restoration, and strengthen coordination among governments and key partners.

The North American Beaver (*Castor canadensis*) is native to California and was once prevalent in watersheds across the state.<sup>1,2,3,4</sup> The scientific literature indicates that beaver dams and associated ponds help mitigate the impacts of climate change, drought and wildfire through sequestering carbon, increasing surface and groundwater storage, attenuating flood waters and creating green "ribbons of fire-resistant riparian corridor" that serve as critical "refugia" for species unable to escape fire.<sup>5,6,7,8</sup>

Beaver dams improve water quality, repair eroded channels, reconnect streams to their floodplains and create and maintain wetland and riparian habitat. Beaver create habitat complexity and diversity in otherwise simplified stream systems and can prolong critical summer streamflow or provide perennial flow to degraded urban and wildland streams that would otherwise run dry. Beaver dams, canals, burrows and food caches greatly expand wetland and wet meadow habitats, create refugia from predation and high flows and provide many other ecosystem benefits to imperiled fish, birds, and amphibians.<sup>9,10,11, 12,13,14</sup>

The legacy of trapping beaver nearly to extinction and systematically removing wood from most California streams has resulted in "structurally starved" riverscapes. Beaver and process-based restoration work to protect and enhance active beaver dam complexes and where beaver are absent place hand-built instream structures to encourage beaver's return and mimic the effect of historic large wood accumulation and beaver dam density. Working with beaver and natural processes to carry out the restoration, this "letting the system do the work," low-tech, low-disturbance approach results in more ecologically resilient and functional riverscapes, with progressively less human intervention needed over time.<sup>15</sup>

For the past decade, native California tribes, non-governmental organizations, private landowners, ranchers, scientists, restoration practitioners, academics, corporations and State and Federal agencies have been working in partnership to successfully implement beaver and process-based restoration techniques to restore ecological function to California's watersheds and increase community resiliency to climate change. These cost-effective, high-impact, low disturbance techniques align well with the Traditional Environmental Knowledge practices of native California tribal partners such as the Maidu Summit Consortium and the Tule River Tribe who are currently working to return beaver to their ancestral homelands.<sup>16</sup>

To date these beaver and process-based restoration treatments have been implemented with great success in many of California forests (Taylor Creek/South Lake Tahoe, Tule River Reservation, Klamath River, Trinity River), developed lands (cities of El Dorado Hills, Martinez, Napa, Sonoma), wetlands (Sutter National Wildlife Refuge, Child's Meadow, Humbug Valley), grazed grasslands (Doty Ravine/Lincoln), the Great Basin (Smoke Creek/Shinn Ranch, Alaska Canyon/Bare Ranch) and many other locations across California and the arid west.

Beaver and process-based restoration provide meaningful climate smart jobs, enhance water quality and security and reduce climate risks to vulnerable communities. Given their low cost per unit, low-tech design requirements and ability to be efficiently permitted through California's Cutting Green Tape

Initiative, these practices have the potential to greatly increase the pace and scale of climate smart restoration across the state. Beaver and process-based restoration greatly accelerate stream, wetland and mountain meadow restoration and thus would be an enormous asset towards achieving California's 30x30, climate smart, natural and working lands, and drought resiliency goals.

We applaud the Governor for working hard to center nature-based solutions that protect California's biodiversity and builds a more resilient future. Many of us who are successfully implementing beaver and process-based restoration in partnership with landowners, conservationists, agencies, and native California tribes welcome the opportunity to provide resources and support towards integrating these highly effective practices and working collaboratively with the CDFW team hired to run this exciting program.

Integrating beaver and process-based restoration into this effort will significantly increase the cost-effectiveness, pace, and scale of restoring critical habitats across California.

Please contact Brock Dolman ([brock@oaec.org](mailto:brock@oaec.org)), Kate Lundquist ([kate@oaec.org](mailto:kate@oaec.org)) or Jennifer Fearing ([jennifer@fearlessadvocacy.com](mailto:jennifer@fearlessadvocacy.com)) with the Occidental Arts & Ecology Center to engage further. Thank you.

Sincerely,

Janet Cox  
Legislation/Policy Director  
350 Silicon Valley

Mike Lynes  
Director of Policy  
Audubon California

David Diaz  
Executive Director  
ActiveSGV

Michael Callahan  
President  
Beaver Institute, Inc.

Elena DeLacy  
Executive Director  
American River Conservancy

Mac Cloyes  
Policy Director  
Blue Forest Conservation

Julie Fair  
Director, California Headwaters Conservation  
American Rivers

L. Gustafson\*  
GIS Analyst  
California Department of Fish and Wildlife

Sabra Purdy  
Restoration Ecologist  
Anabran Solutions

Elijah Portugal\*  
Senior Environmental Scientist  
California Department of Fish and Wildlife

Tim Brick  
Managing Director  
Arroyo Seco Foundation

Olivia Willis\*  
Senior Environmental Scientist/Attorney  
California Department of Fish and Wildlife

Scott Sampson  
Executive Director  
California Academy of Sciences

Jeanne Merrill  
Policy Director  
California Climate & Agriculture Network

Sherri Norris  
Executive Director  
California Indian Environmental Alliance (CIEA)

Nick Jensen PhD  
Conservation Program Director  
California Native Plant Society

Joe Burg, PE  
Environmental scientist  
California resident

Rachel Norton  
Executive Director  
California State Parks Foundation

Emily Fairfax, PhD\*  
Assistant Professor of Environmental Science  
and Resource Management  
California State University Channel Islands

Jacob Katz  
Senior Scientist  
California Trout

Collette Adkins  
Senior Attorney  
Center for Biological Diversity

Sue Smith  
Owner/Manger  
Circle Bar Ranch

Geoff Ellsworth\*  
Mayor  
City of St. Helena

Andria Ventura  
Legislative and Policy Director  
Clean Water Action

Dave Runsten  
Policy Director  
Community Alliance with Family Farmers

Jason Knight  
Individual  
Conservation Society of California

Paul Jenkin  
Ventura Campaign Coordinator,  
Surfrider Foundation  
Coordinator, Matilija Coalition

Donald Chartrand  
Executive Director  
Creek Lands Conservation

Pamela Flick  
California Program Director  
Defenders of Wildlife

Michael Landini  
Owner  
Divide Ranch

Vince Pacific\*  
Hydrologist  
Eldorado National Forest

Morgan Patton  
Executive Director  
Environmental Action Committee of West  
Marin

Thomas Wheeler  
Executive Director  
Environmental Protection Information Center

Jonathan & Misty Gay  
Co-Owners  
Freestone Ranch

Ashley Overhouse  
Resilient Rivers Director  
Friends of the River

Kim Fettke  
Full Spectrum Consulting

Kris Koenig  
President  
Golden Beaver Distillery

Rick Lanman  
Director  
Guadalupe-Coyote Resource Conservation  
District

Joe Bertotti  
Owner  
Hole-In-One Ranches

Rick Lanman, MD  
President  
Institute for Historical Ecology

Jennifer Wood  
Soils Consultant  
JT Wood Soils Consulting

Julia Lund, P.E.  
Project Manager  
Kennedy Jenks

Robert Hixon  
Owner  
Lightning Canyon Ranch - Shasta County

Trina Cunningham  
Executive Director  
Maidu Summit Consortium

Sarah Vroom  
Executive Director  
Mattole Restoration Council

Richard Sykes  
Executive Director  
Mattole Salmon Group

Paige Lincenberg  
Student Rabbi  
MCJC

Raphael Hitzke  
Marketing Manager  
Mellifera Films

Gerald H. Meral, Ph.D.  
Director, California Water Program  
Natural Heritage Institute

Michael Pollock\*  
Research Scientist  
NOAA

Meghan Walla-Murphy  
Director  
North Bay Bear Collaborative

Brock Dolman  
Co-Founder; Program Director  
Occidental Arts & Ecology Center

Kate Lundquist  
Water Institute Director  
Occidental Arts & Ecology Center

Paul Mason  
V.P., Policy & Incentives  
Pacific Forest Trust

Sallie Calhoun  
Owner  
Paicines Ranch

Susan Kirks  
Chair, Board of Directors  
Paula Lane Action Network (PLAN)

Jeff Darlington  
Executive Director  
Placer Land Trust

Leslie Mink  
Project Manager  
Plumas Corporation

Jim Wilcox  
Executive Director  
Plumas Corporation

Sally Gale  
Chair, Marin Resource Conservation District  
Rancher

Suzanne Fouty\*  
Hydrologist/Soils Specialist  
Retired USDA Forest Service

Eli Asarian  
Aquatic ecologist  
Riverbend Sciences

Don McEnhill  
Executive Director  
Russian Riverkeeper

Dana Stolzman  
Executive Director  
Salmonid Restoration Federation

Brandon Herman  
Individual  
San Francisco Estuary Institute

Lauren Stoneburner  
Associate Environmental  
Scientist  
San Francisco Estuary Institute

Tasha McKee McCorkle  
Water Program Director  
Sanctuary Forest

Janice Parakilas,  
Board member  
Sanctuary Forest

Anna Rogers  
Education, Development & Administrative  
Director  
Sanctuary Forest

Sherry Guzzi  
Co-founder  
Sierra Wildlife Coalition

Kate Montgomery  
River Cleanups Coordinator  
SLO Beaver Brigade

Audrey Taub  
Director  
SLO Beaver Brigade

Jomari Peterson  
Core Strategist  
Snowball

Richard Dale  
Executive Director  
Sonoma Ecology Center

Jeff Baldwin\*  
Professor of Geography  
Sonoma State University

Keiko Mertz  
Policy Manager  
South Yuba River Citizens League

Loren Poncia  
Owner  
Stemple Creek Ranch

Charles Delgado  
Policy Director  
Sustainable Conservation

Maddie Chandler  
President  
Sustainable St. Helena

Kevin Swift  
Owner/Founder  
Swift Water Design

Garrett Costello  
President  
Symbiotic Restoration Group

Miles Mosley  
Taming Bear Publishing

Darrow Feldstein  
Founder, Board Member  
The Bird School Project

Ellie Cohen  
CEO  
The Climate Center

Helen Loffland  
Meadow Species Specialist  
The Institute for Bird Populations

Jay Ziegler  
Director of External Affairs and Policy  
The Nature Conservancy

John Davis  
Executive Director  
The Rewilding Institute

Carrie Monohan  
Program Director  
The Sierra Fund

Landon Peppel  
Resource Conservation Director  
The Wildlands Conservancy

Joseph L. James  
Yurok Tribe Chairperson  
The Yurok Tribe

Rene Henery  
California Science Director  
Trout Unlimited

Natalie Stauffer  
Aquatic Ecologist  
Trout Unlimited

Guido Frosini  
Owner/Operator/Ecological Grazer  
True Grass Farms

Bryant Edward Corwin  
Google - Water Stewardship Program Manager  
Tuolumne River Trust - Board Member

Ryan A. Peek\*  
Senior Researcher  
UC Davis, Center for Watershed Sciences

Sarah Yarnell\*  
Research Hydrologist  
University of California, Davis

Bill Leikam - The Fox Guy  
President & Co-founder  
Urban Wildlife Research Project

Matt Berry\*  
ORISE Fellow-- Meadow Ecologist  
USDA Forest Service

Gabrielle Bohlman\*  
Ecologist  
USDA Forest Service

Karen Pope\*  
Research Aquatic Ecologist  
USDA Forest Service Pacific Southwest  
Research Station

Joe Wheaton\*  
Professor of Riverscapes  
Utah State University

Verna Jigour  
Principal  
V•Jigour LLC Rainfall to Groundwater

Brian Schwadron  
RN  
Water of the Vine

Regina Hirsch  
Executive Director  
Watershed Progressive

Brian Kennedy  
Owner  
Westside Herefords

Brittany App  
Film Director  
Where There Once Was Water

Jo Ann Baumgartner  
Executive Director  
Wild Farm Alliance

Heidi Perryman  
Founder and Co-Chair  
Worth A Dam and CA Beaver Summit

Lori Leigh  
Individual

Melanie Bown  
Individual

Kevin McIntyre  
Individual

Albert Chan  
Program Manager, Apple

Jacqueline Peigare  
Individual

Naree Chan, J.D.  
Individual

Alexandra Schmitt  
Individual

Bonnie Felix  
Individual

John Shaban  
Individual

Tamara Harvey  
Individual

Anne Wheaton  
Individual

*\* Signing as an individual, not expressing or representing the positions of employer or organization. Title and affiliation are for identification only.*

cc: Members, Senate and Assembly Budget Committees  
Wade Crowfoot, Secretary, California Natural Resources Agency  
Chuck Bonham, Director, California Department of Fish and Wildlife  
Sergio Aguilar, California Department of Finance  
Jennifer Fearing, Fearless Advocacy

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<sup>1</sup> James, C and R. Lanman. 2012. Novel evidence that beaver were historically native to the Sierra Nevada <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=67452>

<sup>2</sup> Lanman, R.B., H. Perryman, B. Dolman, and C.D. James. 2012. The historical range of beaver in the Sierra Nevada: a review of the evidence. California Fish and Game 98(2):65-80.

<sup>3</sup> Lanman, C.W., Lundquist, K. Perryman, H. Asarian, J.E., Dolman, B. Lanman, R.B., Pollock, M.M. 2013. The historical range of beaver (*Castor canadensis*) in coastal California: an updated review of the evidence. California Fish and Game 99(4):193-22. <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=67444>

<sup>4</sup> Marymor, L., and R. B. Lanman. 2021. Western Message Petroglyphs indicate historic beaver presence in a San Francisco Bay watershed. California Fish and Wildlife Journal 107(2):89-98. <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=193715&inline>

<sup>5</sup> Yarnell, S.M., K. Pope, E.C. Wolf, R. Burnett, and K. Wilson. 2020. A Demonstration of the carbon sequestration and biodiversity benefits of beaver and beaver dam analogue restoration techniques in Childs Meadow, Tehama County, California. Center for Watershed Sciences Technical Report (CWS-2020-01), University of California, Davis. Prepared for CA Department of Fish and Wildlife. pp. 29. <https://watershed.ucdavis.edu/files/UCD-Yarnell%20Childs%20FINAL%20RPT%20Jul%20202015-Dec%202019%20w%20Appendices.pdf>

<sup>6</sup> Wohl, Ellen, 2013. Landscape-scale Carbon Storage Associated with Beaver Dams. Geophysical Research Letters. 40(14): 3631-3636. <https://agupubs.onlinelibrary.wiley.com/doi/full/10.1002/grl.50710>

<sup>7</sup> Hood G.A., and S.E. Bayley. 2008. Beaver (*Castor canadensis*) mitigate the effects on the area of open water in boreal wetlands in western Canada. Biological Conservation 141:556-567. DOI:[10.1016/j.biocon.2007.12.003](https://doi.org/10.1016/j.biocon.2007.12.003)

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- <sup>8</sup> Fairfax, E. and A. Whittle. 2020. Smokey the Beaver: beaver-dammed riparian corridors stay green during wildfire throughout the western USA. *Ecological Applications*. <https://doi.org/10.1002/eap.2225>
- <sup>9</sup> Westbrook, C.J., D.J. Cooper, and B. W. Baker. 2011. Beaver assisted river valley formation. *River Research Applications* 27: 247–256. <https://pubs.er.usgs.gov/publication/70036703>
- <sup>10</sup> Pollock, M.M., R.J. Naiman, H.E. Erickson, C.A. Johnston, J. Pastor, and G. Pinay. 1994. Beaver as engineers: influences on biotic and abiotic characteristics of drainage basins. Pages 117-126 in C. G. Jones and J. H. Lawton, editors. *Linking species to ecosystems*. Chapman and Hall, New York, USA. [https://www.researchgate.net/publication/231218389\\_Hydrologic\\_and\\_Geomorphic\\_Effects\\_of\\_Beaver\\_Dams\\_and\\_Their\\_Influence\\_on\\_Influence\\_on\\_Fishes](https://www.researchgate.net/publication/231218389_Hydrologic_and_Geomorphic_Effects_of_Beaver_Dams_and_Their_Influence_on_Influence_on_Fishes)
- <sup>11</sup> Pollock et al. 2004. The Importance of Beaver Ponds to Coho Salmon Production in the Stillaguamish River Basin, Washington, USA. DOI:[10.1577/M03-156.1](https://doi.org/10.1577/M03-156.1)
- <sup>12</sup> Parish, M. and J. Garwood. 2015. Distribution of Juvenile Salmonids and Seasonally Available Aquatic Habitats within the Lower Smith River Basin and Estuary, Del Norte County, California. DOI:[10.13140/RG.2.1.1220.3603](https://doi.org/10.13140/RG.2.1.1220.3603)
- <sup>13</sup> Bouwes, N., N. Weber, C.E. Jordan, W.C. Saunders, I.A. Tattam, C. Volk, J.M. Wheaton, and M.M. Pollock. 2016. Ecosystem experiment reveals benefits of natural and simulated beaver dams to a threatened population of steelhead (*Oncorhynchus mykiss*). *Scientific Reports*, 6. DOI:[10.1038/srep28581](https://doi.org/10.1038/srep28581)
- <sup>14</sup> Campos, B. R., H. L. Loffland, and R. D. Burnett. 2019. Relationships between Willow Flycatcher and Beaver-Modified Stream Reaches in Sierra Nevada Montane Meadows. Report to The Nature Conservancy. [https://www.birdpop.org/docs/pubs/Campos\\_et\\_al\\_2019\\_Relationships\\_Between\\_Willow\\_Flycatcher\\_and\\_Modified\\_Stream\\_Reaches.pdf](https://www.birdpop.org/docs/pubs/Campos_et_al_2019_Relationships_Between_Willow_Flycatcher_and_Modified_Stream_Reaches.pdf)
- <sup>15</sup> Ciotti, D., J. Mckee, K. Pope, G. Kondolf, M. Pollock. 2021. Design Criteria for Process-Based Restoration of Fluvial Systems. *BioScience*. 71. DOI:[10.1093/biosci/biab065](https://doi.org/10.1093/biosci/biab065)
- <sup>16</sup> Lundquist, K., B. Dolman. 2020. Beaver Recruitment Strategy for Tásmam Koyóm. Prepared on behalf of The Maidu Summit Consortium for the California Department of Fish and Wildlife. <https://oaec.org/publications/beaver-recruitment-strategy-for-tasmam-koyom/>