

## Staff Summary for April 17-18, 2024

**25. California Grizzly Bear****Today's Item**Information Action 

Recognize the 100-year anniversary of the extinction of California's state animal, grizzly bear (*Ursus arctos californicus*).

**Summary of Previous/Future Actions (N/A)****Background**

Despite having been extirpated (made extinct) from the state 100 years ago this month, the California grizzly bear, also commonly called the brown bear, remains one of California's most iconic species. The distinctive brown-golden colored bear is featured on the state's great seal and flag and is the California state animal. The California grizzly bear served as an important ecological keystone species, originally present throughout the state. However, it was hunted and trapped to extirpation, with an individual believed to be the last in California spotted in Sequoia National Park in April 1924. California is the only state in the union that carries the image of an extinct animal on its state flag and seal.

Notably, the grizzly bear remains a socially, culturally, and spiritually important animal to many California Native American tribes and tribal communities. Recently, the California State Senate declared 2024 to be the Year of the California Grizzly Bear through [a resolution](#) that, in part, acknowledges for thousands of years grizzly bears coexisted with the ancestors of contemporary California Native American tribes.

Today, the Commission will receive a presentation on the ecology, history, and significance of grizzly bear in California (Exhibit 1), hear from tribal voices on the importance of grizzly bear to Native Americans, and potentially adopt a resolution (Exhibit 2) recognizing the 100-year anniversary of the extirpation of grizzly bear in California.

**Significant Public Comments (N/A)****Recommendation**

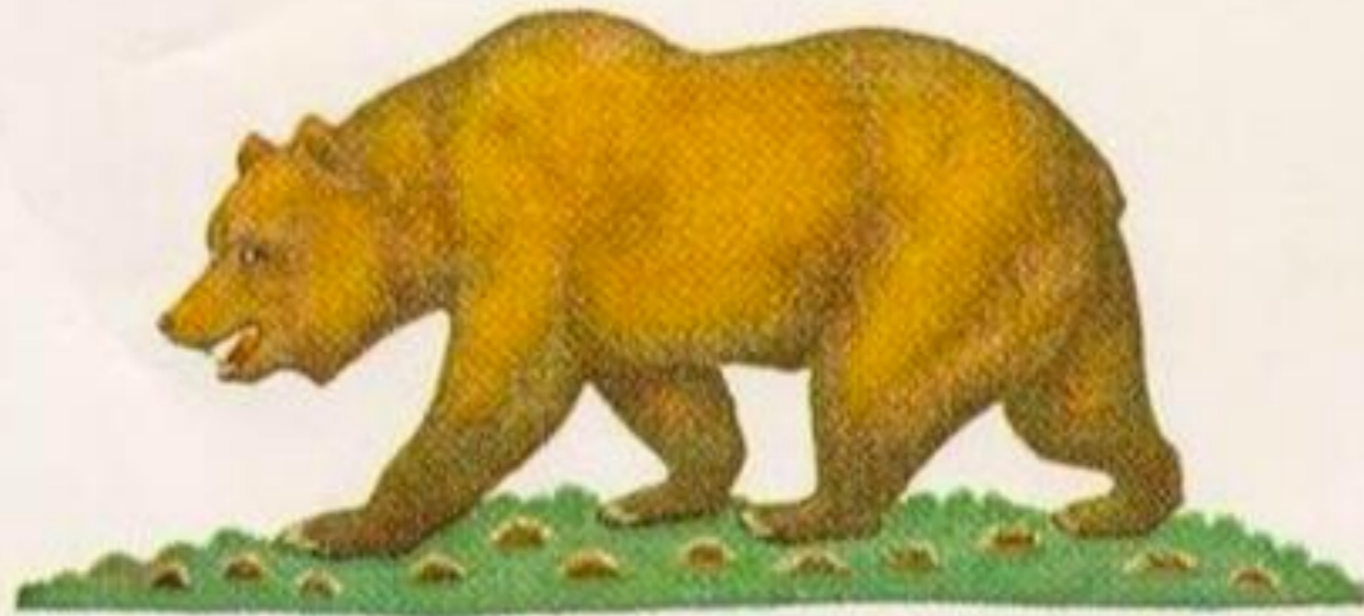
**Commission staff:** Adopt the draft resolution in Exhibit 2 recognizing the 100-year anniversary of the extirpation of grizzly bear in California.

**Exhibits**

1. [Presentation from Dr. Peter Alagona, Associate Professor, Environmental Studies Program, University of California, Santa Barbara](#)
2. [Draft resolution](#)

**Motion**

Moved by \_\_\_\_\_ and seconded by \_\_\_\_\_ that the Commission adopts the draft resolution recognizing the 100-year anniversary of the extirpation of grizzly bear in California.



**CALIFORNIA REPUBLIC**

The California Grizzly: Then and Now

# Brown bear basics

## Global population and range of brown bears



### Population estimates:

Alaska = 40,000  
Canada = 25,000  
Lower 48 states = 2,000  
Europe = 25,000  
Asia and the Middle East = 115,000



**Total = ~207,000**  
An IUCN "species of least concern"

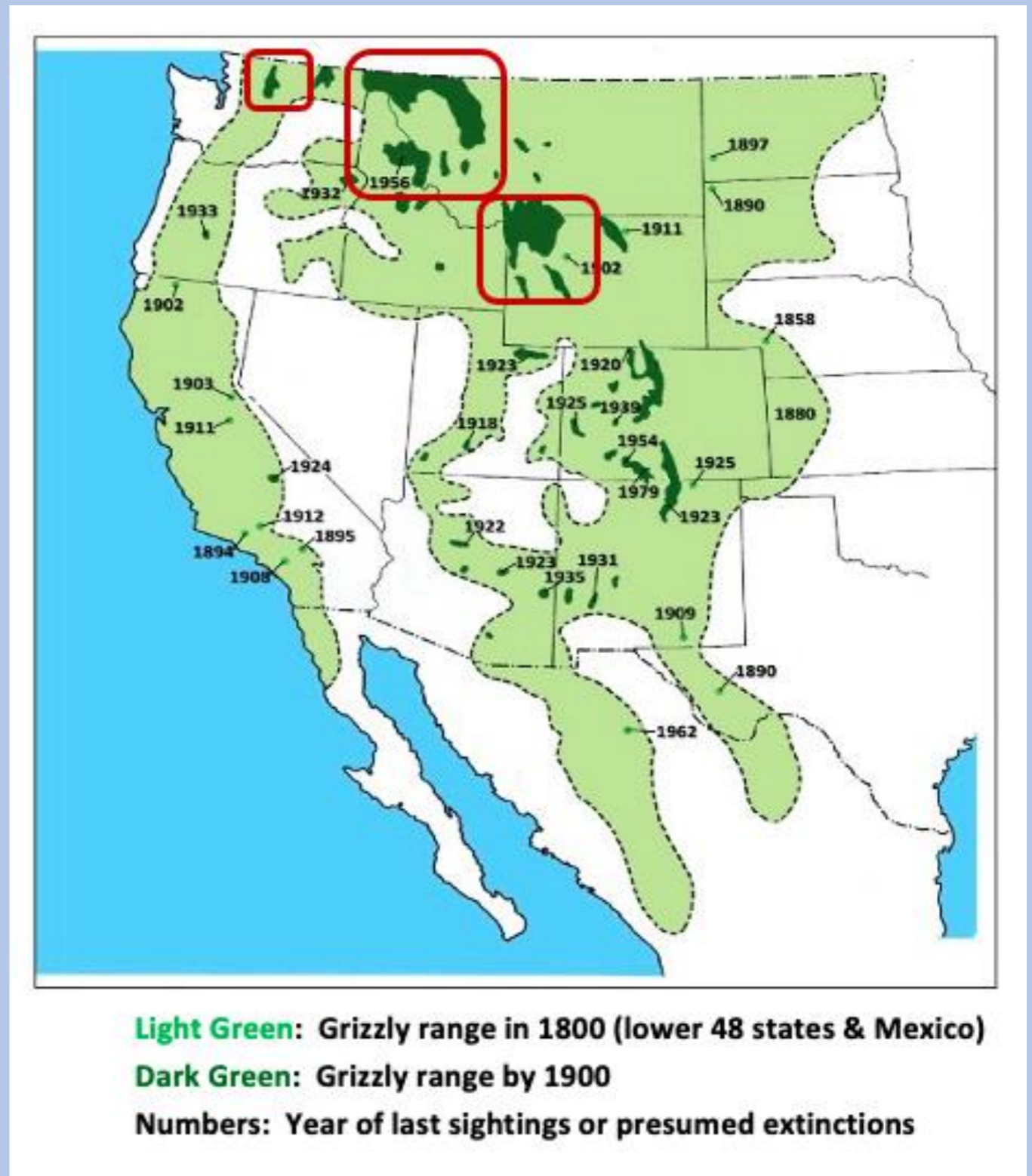


# Grizzly basics

In 1800, there were an estimated 50,000 grizzly bears in the lower 48 US states, **around 10,000 of which lived in CA.**

Since then, their population has been slashed by about 96% to 2,000 (up from 1,000 in 1975).

Under its current plan, the FWS could declare grizzlies fully "recovered" with a population of just 3,000—a total historical decline of 94%.

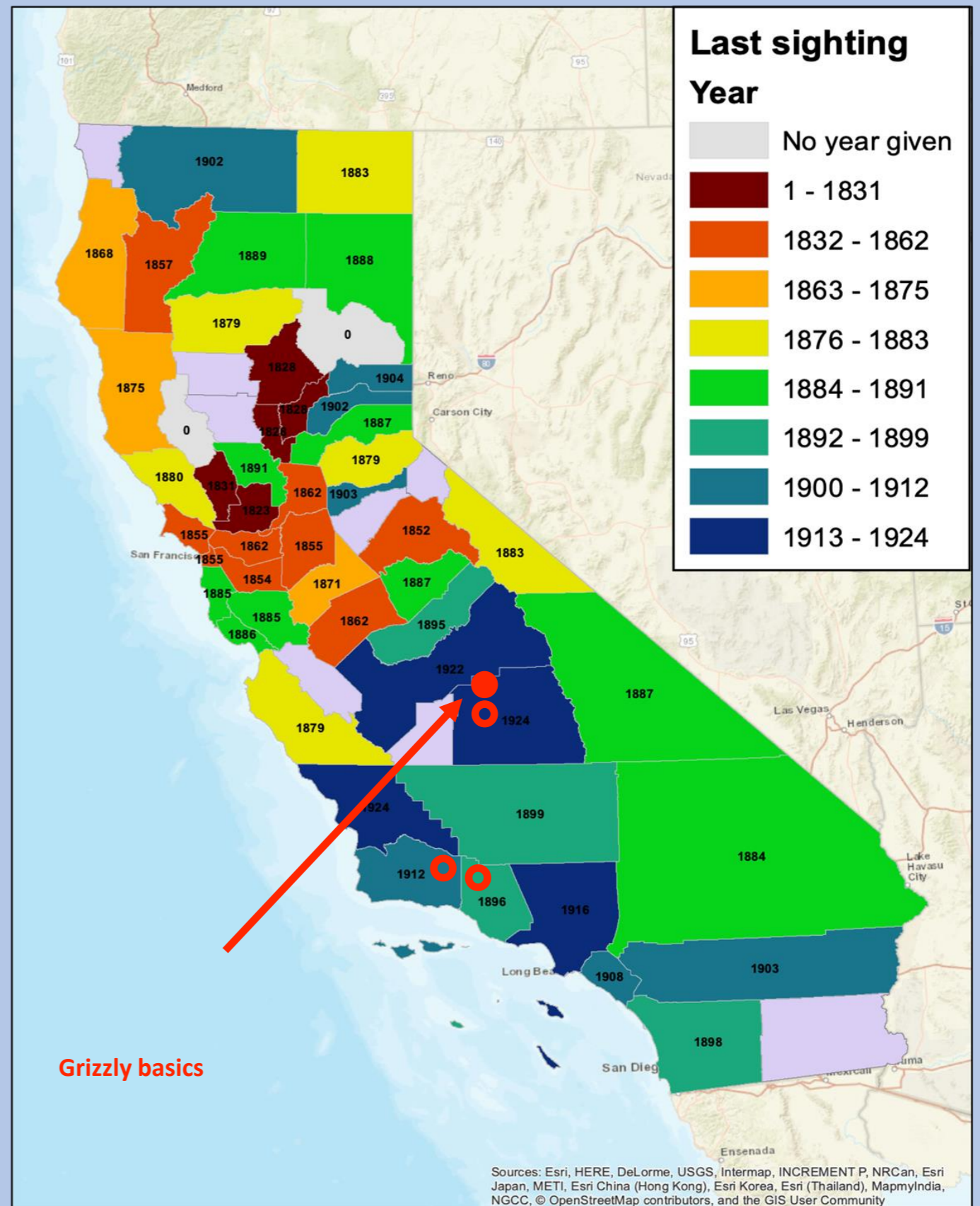


# Grizzly basics

For millennia, grizzlies shared their habitats with diverse and prosperous Indigenous societies.

The bears continued to thrive during the Mission and Rancho eras, from 1769 to 1848.

Beginning around 1850, grizzlies declined rapidly. They disappeared first from the most developed areas of Northern CA, and then later from more remote areas in Central and Southern CA.





# The California Grizzly Research Network

In 2016, an interdisciplinary research group convened at UC Santa Barbara to conduct the first major study of CA grizzlies in more than six decades.



## Trends in Ecology & Evolution

### Science & Society

#### Analogies for a No-Analog World: Tackling Uncertainties in Reintroduction Planning

Elizabeth S. Forbes,<sup>1</sup>  
Peter S. Alagona,<sup>2,\*</sup>  
Andrea J. Adams,<sup>3</sup>  
Sarah E. Anderson,<sup>4,5</sup>  
Kevin C. Brown,<sup>2</sup> Jolie Colby,<sup>6</sup>  
Scott D. Cooper,<sup>1</sup>

the information necessary for sound reintroduction plans more difficult by the day.

Conservationists often rely on analogies to guide their logical arguments that more things or cases fit their knowledge and help them to paint a more coherent picture of how reintroduced species may alter ecosystems by making their analogies and interdisciplinary – and them to paint a more coherent picture of how reintroduced species may alter ecosystems.



## REVIEW

### Meeting at the crossroads: An environmental justice framework for large carnivore reintroductions and recoveries

Alex McInturf<sup>1,2,\*</sup>, Clare E. B. Cannon<sup>3</sup>, Peter S. Alagona<sup>1</sup>, and David N. Pellow<sup>4</sup>

As global environmental changes continue to accelerate, research and practice in the field of conservation biology may be essential to help forestall precipitous declines in the earth's ability to sustain a diverse life. However, many conservation programs have faced scrutiny for the social injustices they or especially within the paradigms of demarcating protected lands. Currently, a new conservation paradigm emphasizing landscapes shared by people and wildlife is emerging, and with it, an opportunity to ensure that justice for both human and beyond-human groups is given consideration. Here, we examine a paradigmatic of this new conservation paradigm, the reintroduction and recovery of large carnivore up and draw from theories in environmental justice to detail the many forms of justice at stake in these efforts. Our analysis practices do these things: a range of justice scholars' environmental of understanding a comprehensive recovery program conservation.

**Keywords:** Reintroduction

**1. Introduction**  
Over the past environmental ing the conditions human life and biodiversity at to these global comprising the understood an earth's biologic system (Bosch, 2015), biodiversity and ecological health.

**Authors for correspondence:**  
Alexis M. Mychajiw  
e-mail: amychajiw@middlebury.edu  
Scott D. Cooper  
e-mail: scooper@ucsb.edu  
Peter S. Alagona  
e-mail: alagona@ucsb.edu

Electronic supplementary material is available online at <https://doi.org/10.1093/te/taab001>. c0955718.

THE ROYAL SOCIETY PUBLISHING

### Coupled social and ecological change drove the historical extinction of the California grizzly bear (*Ursus arctos californicus*)

Alexis M. Mychajiw<sup>1,2,3</sup>, Andrea J. Adams<sup>4</sup>, Kevin C. Brown<sup>5</sup>, Beau T. Campbell<sup>6</sup>, Molly Hardesty-Moore<sup>7</sup>, Zoë S. Welch<sup>8</sup>, Henry M. Page<sup>9</sup>, John R. Southern<sup>9</sup>, Scott D. Cooper<sup>1</sup> and Peter S. Alagona<sup>1</sup>

<sup>1</sup>Department of Biology, and <sup>2</sup>Environmental Studies Program, Middlebury College, Middlebury, VT, USA  
<sup>3</sup>U.S. Fish & Wildlife Service, San Diego, CA, USA  
<sup>4</sup>U.S. Geological Survey, Denver, CO, USA  
<sup>5</sup>U.S. Geological Survey, Denver, CO, USA  
<sup>6</sup>U.S. Geological Survey, Denver, CO, USA  
<sup>7</sup>U.S. Geological Survey, Denver, CO, USA  
<sup>8</sup>U.S. Geological Survey, Denver, CO, USA  
<sup>9</sup>U.S. Geological Survey, Denver, CO, USA

Received: 19 April 2023  
Accepted: 6 November 2023

**Subject Category:** Paleontology

**Subject Area:** paleontology

**Keywords:** extinction, stable isotope, carnivore, human-wildlife conflict, California, historical ecology

## 1. Introduction

Understanding the past ecology and interactions of reintroduced species is essential for their reintroduction (e.g. I leader Carnivore) and no initiatives—ranging from across their former distribution (3–5). Primary newspapers, can offer crucial ecology and interactions; straightforward biological writing with varying voice should be regarded with checked with other evidence meaning prior to their use. This is especially true for

## PROCEEDINGS B

royalsocietypublishing.org/journal/rspb

## Research

**Cite this article:** Mychajiw AM et al. 2023 Coupled social and ecological change drove the historical extinction of the California grizzly bear (*Ursus arctos californicus*). *Proc. R. Soc. B* 290: 20230921. <https://doi.org/10.1098/rspb.2023.0921>

Received: 19 April 2023  
Accepted: 6 November 2023

**Subject Category:** Paleontology

**Subject Area:** paleontology

**Keywords:** extinction, stable isotope, carnivore, human-wildlife conflict, California, historical ecology

**Authors for correspondence:**  
Alexis M. Mychajiw  
e-mail: amychajiw@middlebury.edu  
Scott D. Cooper  
e-mail: scooper@ucsb.edu  
Peter S. Alagona  
e-mail: alagona@ucsb.edu

Electronic supplementary material is available online at <https://doi.org/10.1098/rspb.2023.0921>. c0955718.

THE ROYAL SOCIETY PUBLISHING

HUMAN DIMENSIONS OF WILDLIFE  
<https://doi.org/10.1080/10871209.2019.1622055>



## Drivers of support: The case of species reintroductions with an ill-informed public

Elizabeth H.T. Hiroyasu<sup>1</sup>, Christopher P. Miljanich<sup>2</sup>, and Sarah E. Anderson<sup>1,2</sup>

<sup>1</sup>Bren School of Environmental Science & Management, University of California, Santa Barbara, USA  
<sup>2</sup>Department of Political Science, University of California, Santa Barbara, USA

## ABSTRACT

[Downloaded free from <http://www.conservationandsociety.org> on Tuesday, February 9, 2021, IP: 216.67.7.76]

Conservation and Society AOP: 1-11, 2021

## KEYWORDS

## The Ethics of Reintroducing Large Carnivores: The Case of the California Grizzly

Lee A.,<sup>1</sup> A.M. Laird<sup>2</sup>, L. Brann<sup>3</sup>, C. Coxon<sup>4</sup>, A.J. Hamilton<sup>5</sup>, L.A. Lawhon<sup>6</sup>, J.A. Martin<sup>7</sup>, N. Rehnberg<sup>8</sup>, B.P. Tyrrell<sup>9</sup>, Z. Welch<sup>10</sup>, B. Hale<sup>11</sup>, P.S. Alagona<sup>1</sup>

<sup>1</sup>Institute of Culture and Environment, Alaska Pacific University, Anchorage, Alaska, USA

<sup>2</sup>Department of Philosophy, University of Colorado, Boulder, Colorado, USA

<sup>3</sup>Environmental Studies Program, University of Colorado, Boulder, Colorado, USA

<sup>4</sup>Bren School of Environmental Science & Management, University of California, Santa Barbara, California, USA

<sup>5</sup>Law School, University of Colorado Boulder, Boulder, Colorado, USA

<sup>6</sup>Masters of the Environment, University of Colorado Boulder, 397 UCB, Boulder, Colorado, USA

<sup>7</sup>Environmental Studies Program, University of California, Santa Barbara, California, USA

<sup>8</sup>Department of History, University of California, Santa Barbara, California, USA

308 ENVIRONMENTAL HISTORY • 27.1 • APRIL 2022

## Southern California's Three-Bear Shuffle: Survival, Extinction, and Recovery in an Urban Biodiversity Hot Spot

PETER S. ALAGONA, University of California, Santa Barbara  
ALEXIS M. MYCHAJIWI, Middlebury College

Of all the grim trends that define the sixth mass extinction of life on earth, few are more widespread or consequential than the loss of large animals. "Faunal downsizing" occurs when people remove the largest individuals from a population or the largest species from a community.<sup>27</sup> Caused by wildlife exploitation and habitat loss, faunal downsizing may cause further species extinctions, leading to changes in vegetation structure, carbon emissions, fire regimes, and even the risk of contagious diseases. Underway for millennia, faunal downsizing has occurred in so many

we see it as an incidental history. In Southern California housing some of the most diverse of the world's biomes, as well as a rich and diverse Southern California historical record show are but diminutive at once inhabited

insight. The story linear nor inevitable still shape the recent past, on conservation. Here we millennia, also re-conservation by



## California Grizzly Reintroduction Roadmap

California Grizzly Research Network  
Winter 2023

© 2023 The Author(s). Published by



# What we've learned



When we began, we thought we would be mainly updating and filling gaps in a well-known story. Gradually, however, we realized that we were rewriting this story—and adding new chapters.

# 1) What the public knows...

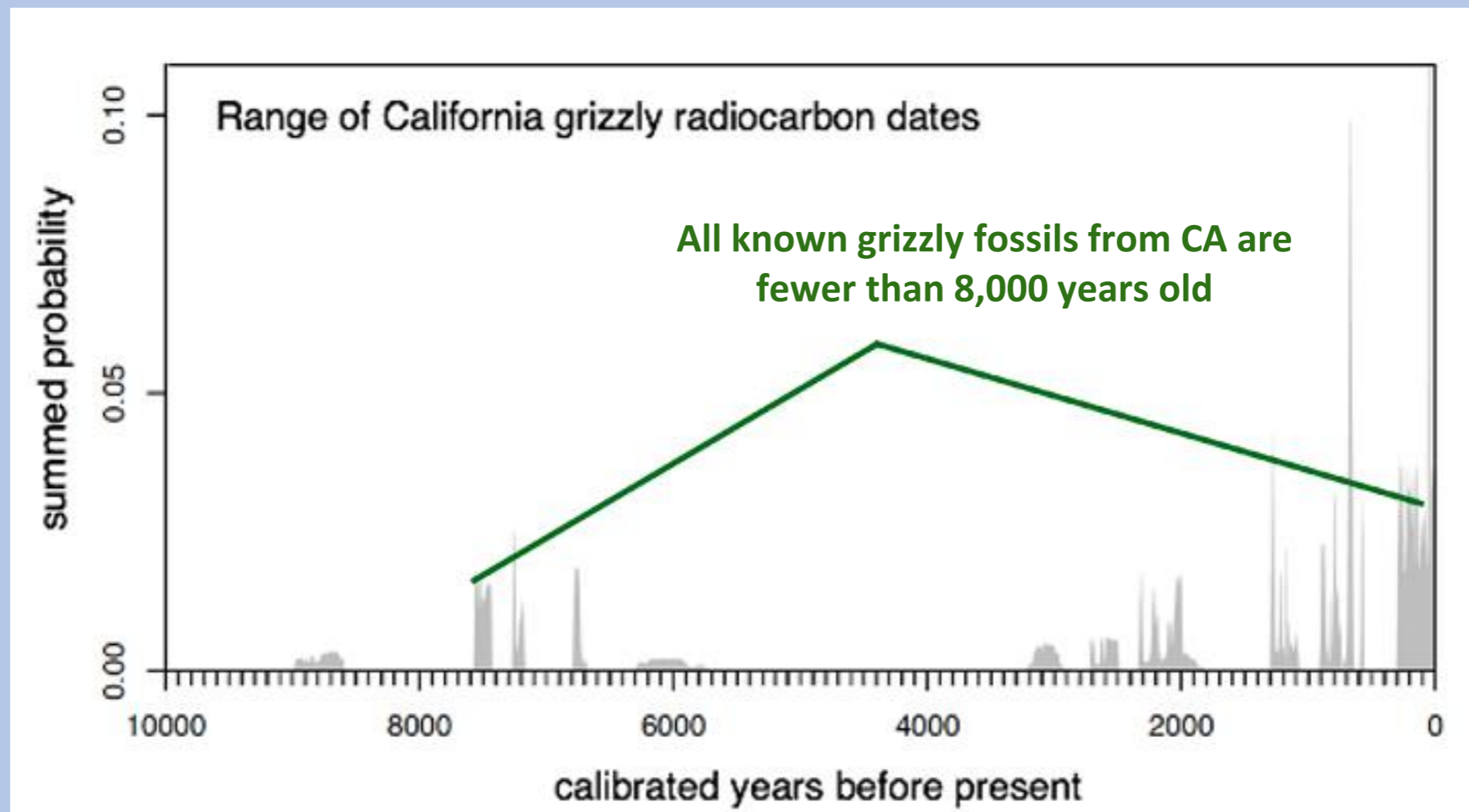
The grizzly's image is everywhere in CA, but **most of this state's residents little about the bear.** According to a 2019 **survey**, only about 25% know that grizzlies don't currently exist in the state.





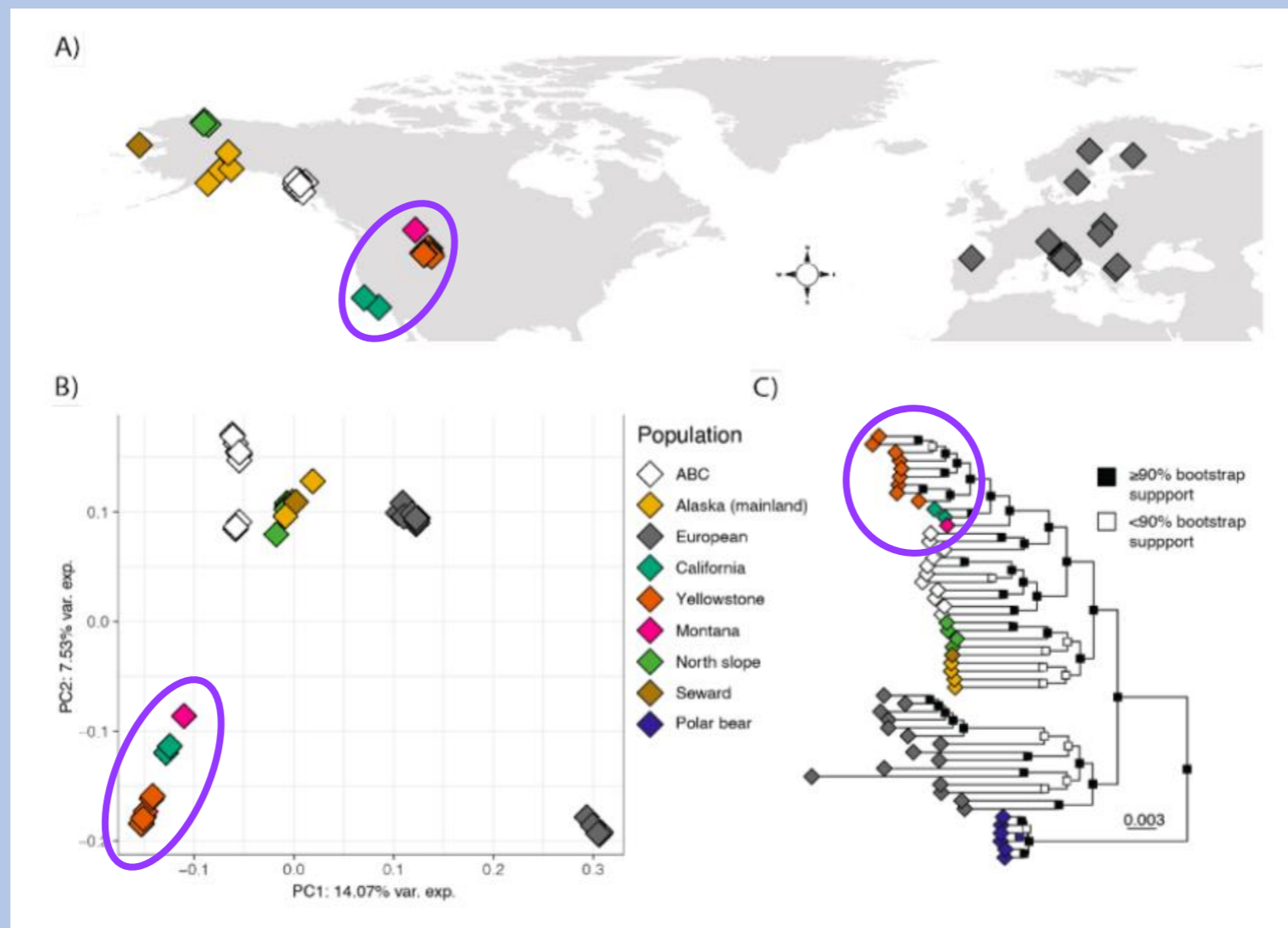
## 2) When the bears arrived in CA...

Black bears arrived in CA up to one million years ago. **Carbon dating** shows that **grizzlies are stunningly new to CA, in evolutionary history**, likely having arrived here fewer than 10,000 years ago.



### 3) Who the bears were related to...

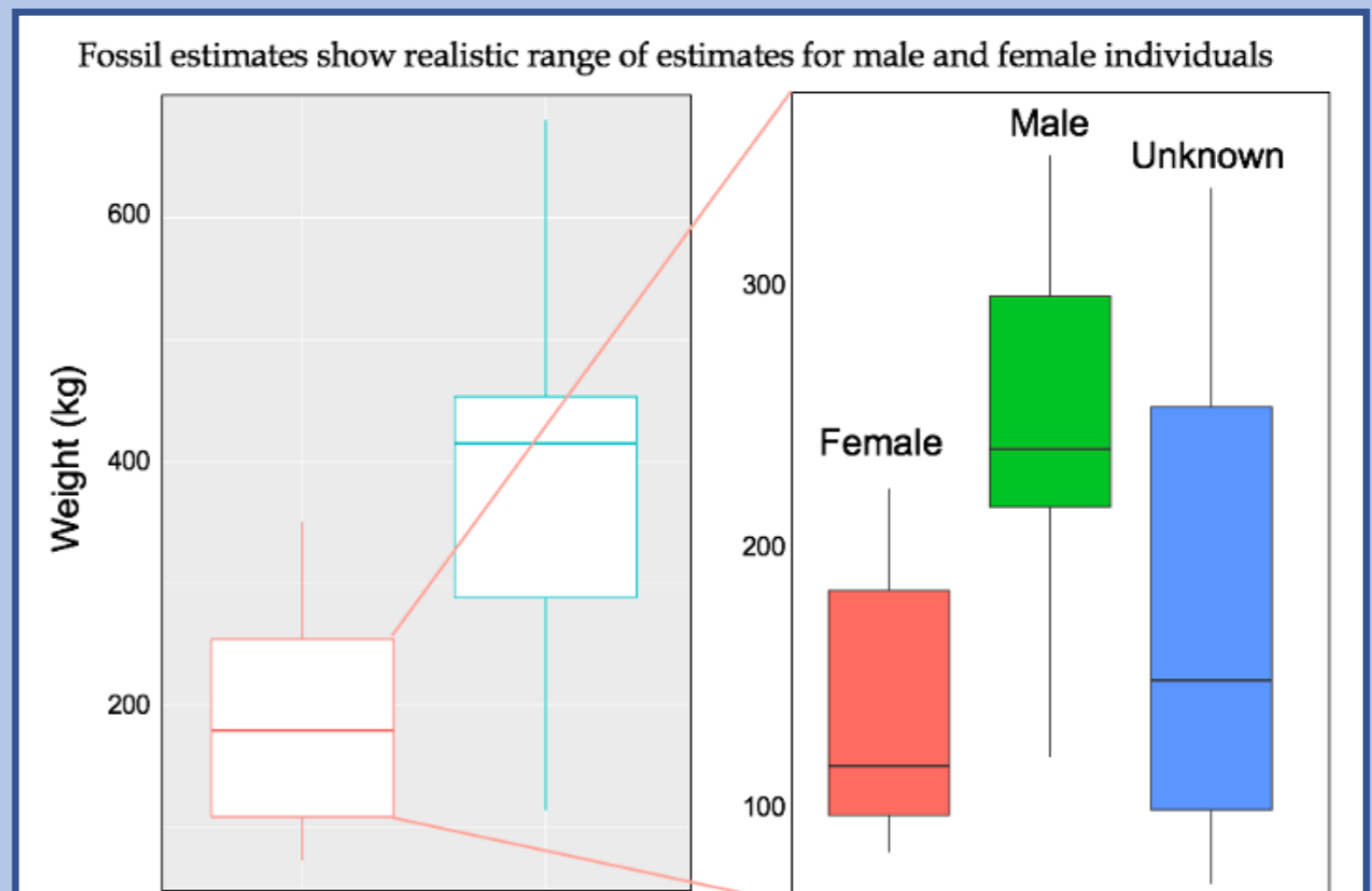
The CA grizzly has long been considered a distinct subspecies, *Ursus arctos californianus*. Forthcoming **genomic research** shows that the CA grizzly was indistinguishable from grizzly bears living in the Northern Rockies today.





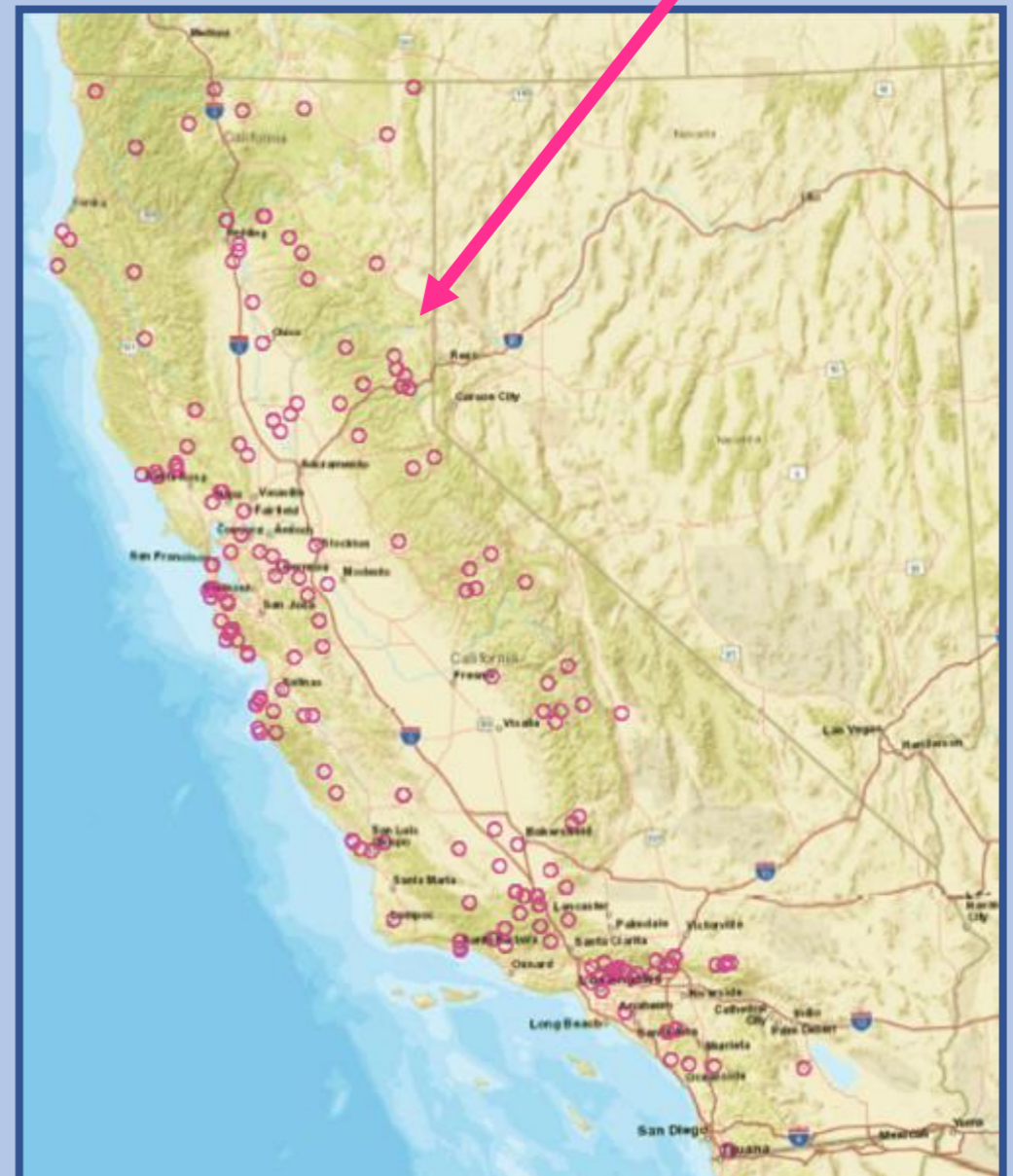
## 4) How big they were...

CA grizzlies were reputed to be among the world's biggest brown bears. Yet, **anatomical measurements of museum specimens** show that most probably weighed 400 to 750 pounds—the same size as a typical Yellowstone grizzly.



## 5) Where they lived...

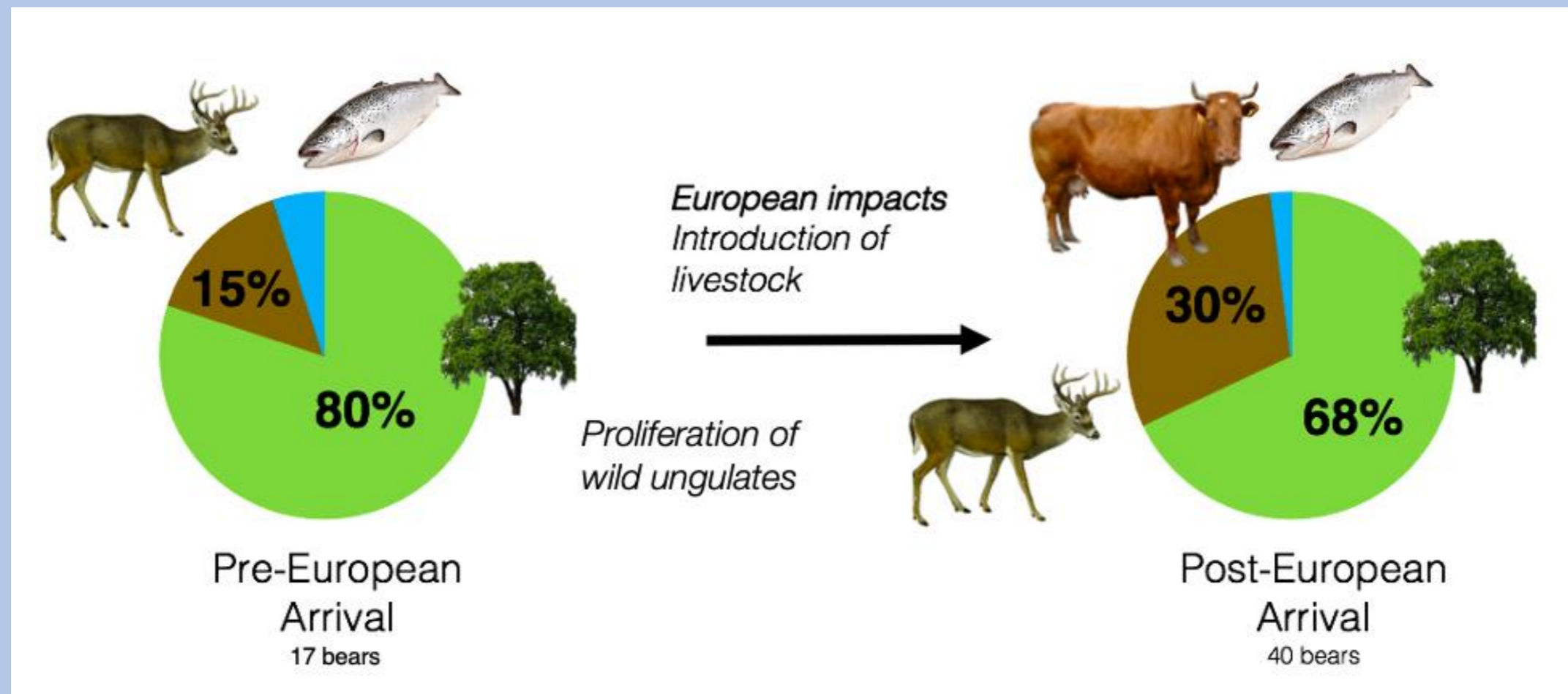
CA grizzlies were thought to live mainly in coastal, chaparral, and oak ecosystems. **Archival research** to identify **historical sightings (n=330+)** shows that **they lived everywhere** except the low deserts.





## 6) What they ate...

CA grizzlies were thought to be among the world's most carnivorous brown bears. Prior to the Mission Era, however, **CA grizzlies were mostly herbivorous**. Later, they became modestly more carnivorous, as did several other native species.



Findings based on **stable isotope analysis** of 57 museum specimens

Research



**Cite this article:** Mychajiw AM et al. 2023 Coupled social and ecological change drove the historical extinction of the California grizzly bear (*Ursus arctos californicus*). *Proc. R. Soc. B* 290: 20230021. <https://doi.org/10.1098/rspb.2023.0021>

Received: 19 April 2023  
Accepted: 8 November 2023

**Subject Category:**  
Palaeontology

**Subject Areas:**  
palaeontology

**Keywords:**  
extinction, stable isotope, carnivore, human-wildlife conflict, California, historical ecology

**Authors for correspondence:**

Alexis M. Mychajiw  
e-mail: amy@middlebury.edu  
Scott D. Cooper  
e-mail: scooper@acsb.edu  
Peter S. Alagona  
e-mail: alagona@es.ucsb.edu

Electronic supplementary material is available online at <https://doi.org/10.1098/rspb.2023.0021>.

# Coupled social and ecological change drove the historical extinction of the California grizzly bear (*Ursus arctos californicus*)

Alexis M. Mychajiw<sup>1,2,3</sup>, Andrea J. Adams<sup>2</sup>, Kevin C. Brown<sup>4</sup>, Beau T. Campbell<sup>4</sup>, Molly Hardesty-Moore<sup>7</sup>, Zoë S. Welch<sup>7</sup>, Henry M. Page<sup>4</sup>, John R. Southan<sup>5</sup>, Scott D. Cooper<sup>7</sup> and Peter S. Alagona<sup>6</sup>

<sup>1</sup>Department of Biology, and <sup>2</sup>Environmental Studies Program, Middlebury College, Middlebury, VT, USA  
<sup>3</sup>La Brea Tar Pits & Museum, Los Angeles, CA, USA

<sup>4</sup>Dinosaur Institute, Natural History Museum of Los Angeles County, Los Angeles, CA, USA  
<sup>5</sup>Earth Research Institute, <sup>6</sup>Environmental Studies Program, <sup>7</sup>Department of Ecology, Evolution, and Marine Biology, and <sup>8</sup>Marine Science Institute, University of California, Santa Barbara, CA, USA  
<sup>9</sup>Department of Earth System Science, University of California, Irvine, CA, USA

AMM, 0000-0001-4801-7496; KCB, 0000-0001-5409-6158

Large carnivores (order Carnivora) are among the world's most threatened mammals due to a confluence of ecological and social forces that have unfolded over centuries. Combining specimens from natural history collections with documents from archival records, we reconstructed the factors surrounding the extinction of the California grizzly bear (*Ursus arctos californicus*), a once-abundant brown bear subspecies last seen in 1924. Historical documents portrayed California grizzlies as massive hypercarnivores that endangered public safety. Yet, morphological measurements on skulls and teeth generate smaller body size estimates in alignment with extant North American grizzly populations (approx. 200 kg). Stable isotope analysis ( $\delta^{13}C$ ,  $\delta^{15}N$ ) of pelts and bones ( $n = 57$ ) revealed that grizzlies derived less than 10% of their nutrition from terrestrial animal sources and were therefore largely herbivorous for millennia prior to the first European arrival in this region in 1542. Later colonial land uses, beginning in 1769 with the Mission era, led grizzlies to moderately increase animal protein consumption (up to 26% of diet), but grizzlies still consumed far less livestock than otherwise claimed by contemporary accounts. We show how human activities can provoke short-term behavioural shifts, such as heightened levels of carnivory, that in turn can lead to exaggerated predation narratives and incentivize persecution, triggering rapid loss of an otherwise widespread and ecologically flexible animal.

## 1. Introduction

Understanding the past ecological dynamics of extirpated and currently endangered species is essential for facilitating their recovery, and where possible, their reintroduction (e.g. IUCN Green List [1,2]). Large mammalian carnivores (order Carnivora) are now at the centre of numerous global conservation initiatives—ranging from intentional re-introductions to natural re-expansions across their former distributions—and historical data are increasingly sought for guidance [3–5]. Primary historical sources, such as diaries, gazetteers and newspapers, can offer crucial conservation-relevant insights into an organism's ecology and interactions with humans [6,7]. But such sources rarely provide straightforward biological data because they were produced by authors writing with varying viewpoints during particular historical moments; they should be regarded with caution, placed in their social context, and cross-checked with other evidence to determine their veracity and interpret their meaning prior to their implementation in conservation decision-making [8,9]. This is especially true for historical observations of mammalian carnivores,

Downloaded from <https://royalsocietypublishing.org/> on 18 January 2024



A grizzly bear roams near Beaver Lake in Yellowstone National Park. A new study says California's extinct grizzly bear was mostly vegetarian.

By Karen Garcia  
Staff Writer  
Jan. 11, 2024 8:16 PM PT

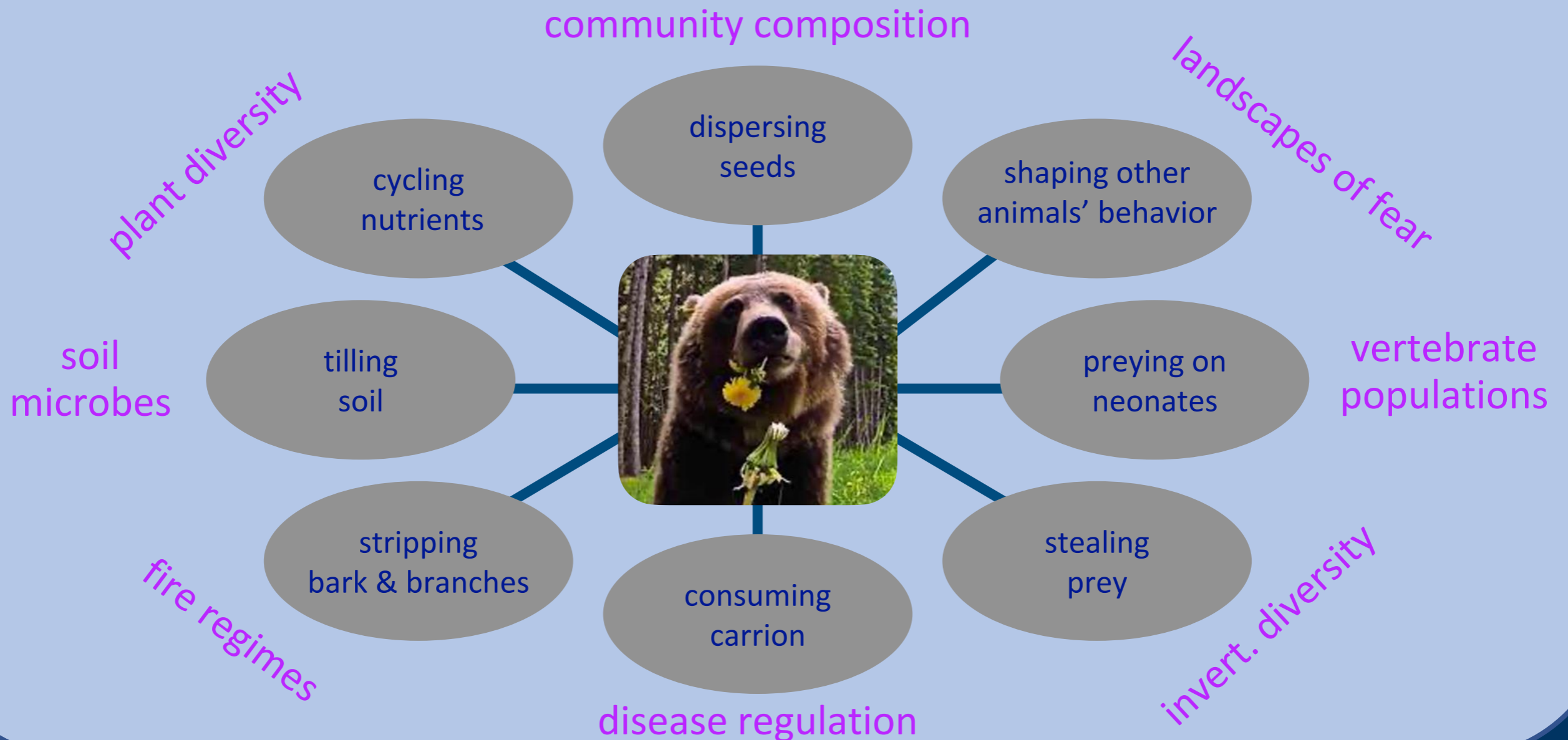


Getty



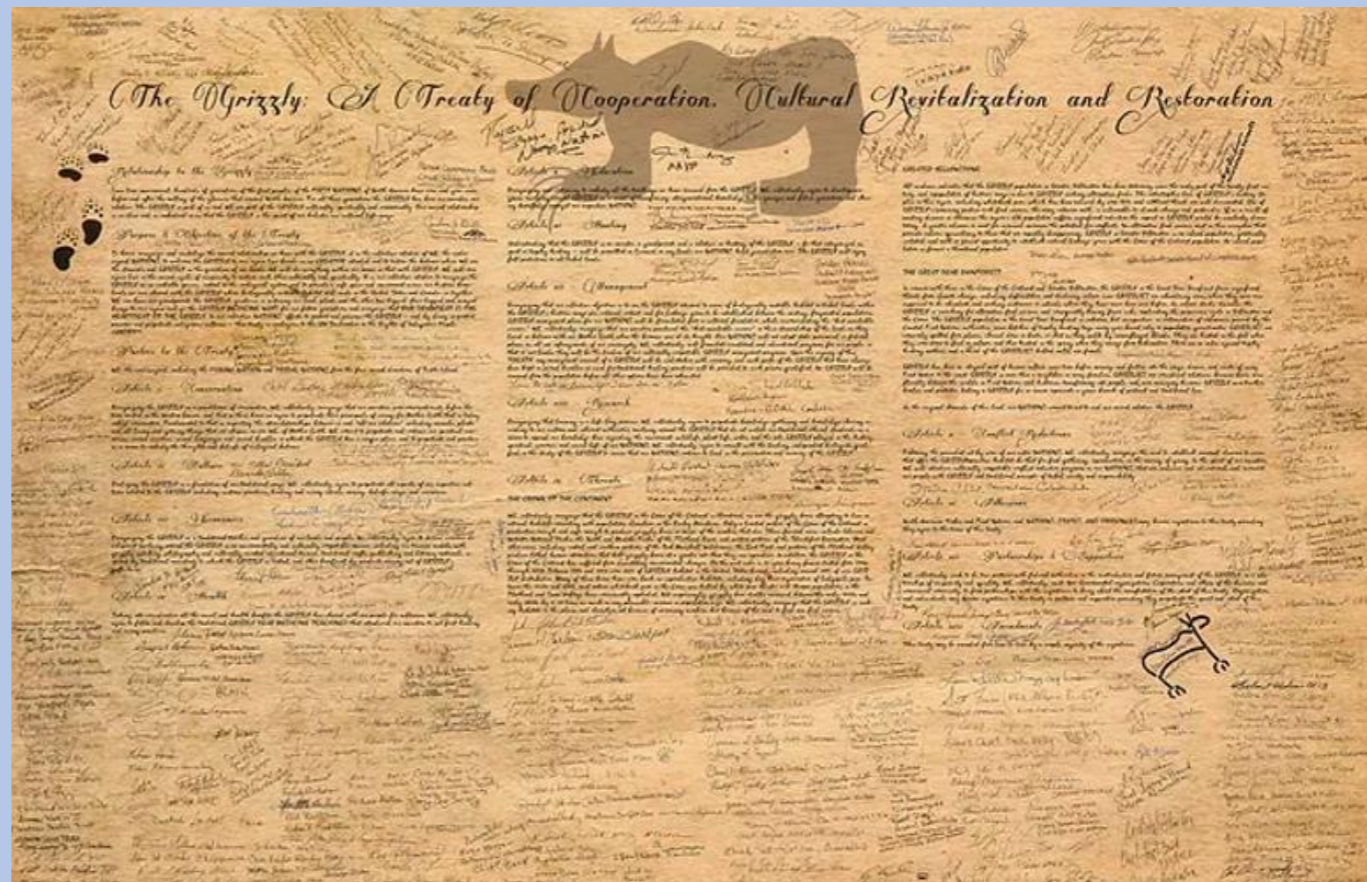
## 7) How they shaped their habitats...

Some argue that pumas, black bears, and even feral hogs fill niches left behind by California's grizzlies. Yet, research from other regions, such as BC, shows that grizzlies shape their habitats in unique ways. **California's ecosystems are likely still adjusting to the loss of this keystone species.**



## 8) How they interacted with Indigenous people...

Settlers claimed that Indigenous people thanked them for eradicating CA's terrifying bears. Yet **interdisciplinary anthropological work** now suggests that humans and bears were partners in an intricate socio-ecological system—centered on a kind of *multi-species horticulture*—that enriched and enlivened native cultures and landscapes.





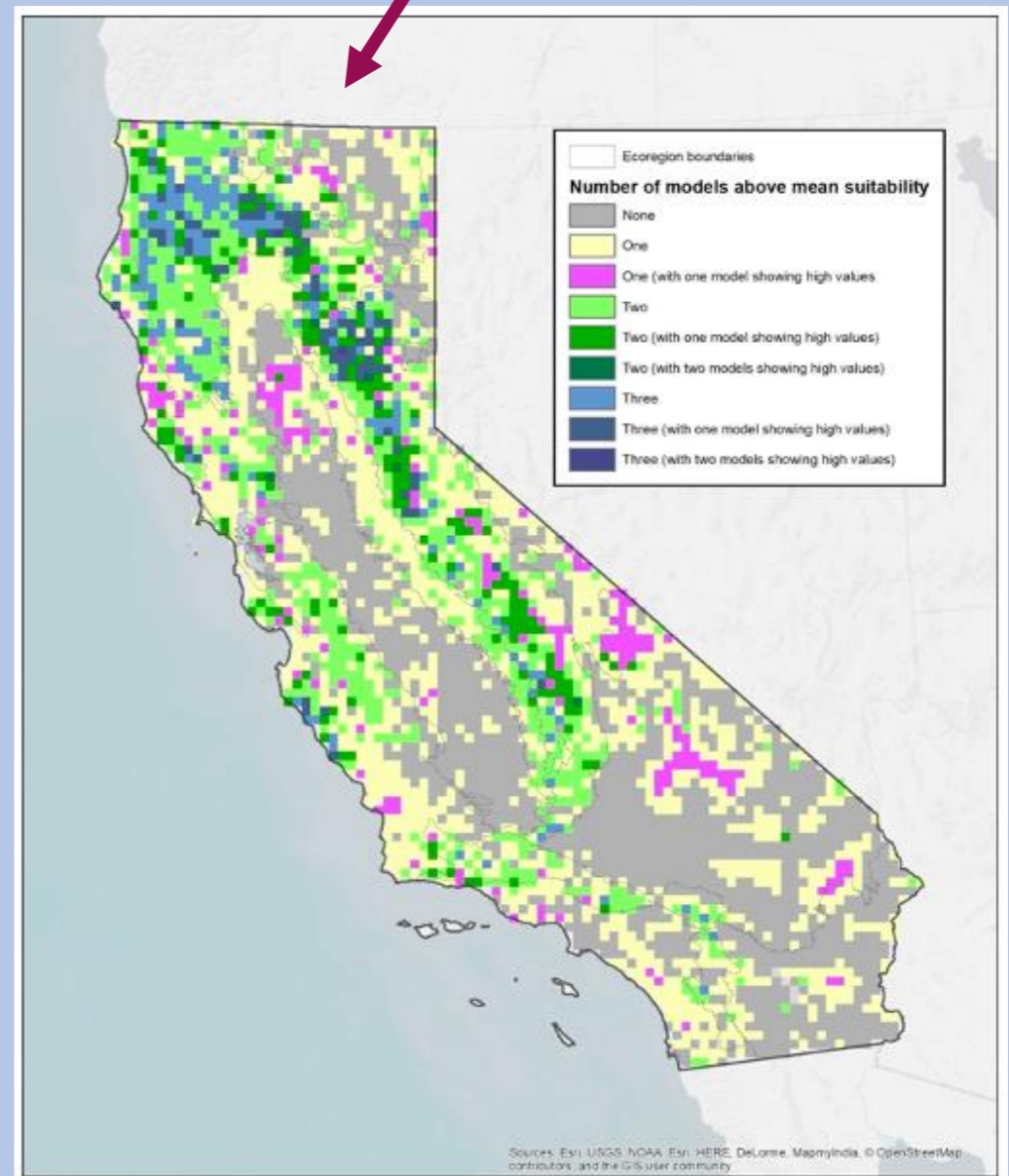
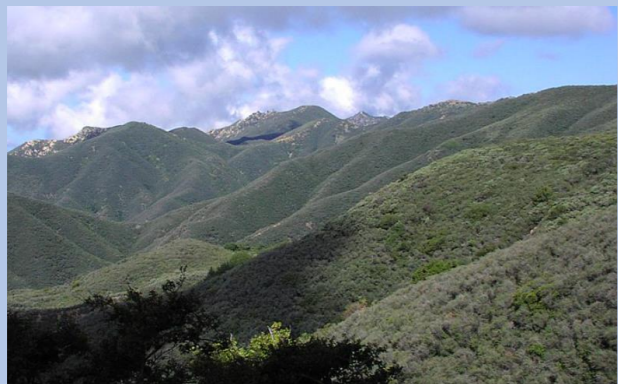
## 9) Why they disappeared...

California's grizzlies did not disappear due to some inexorable process of habitat loss. **Archival research** shows that **they got swept up in a genocidal campaign of annihilation** that sought to eradicate everything—and everyone—native to this region that could not be controlled or commodified.



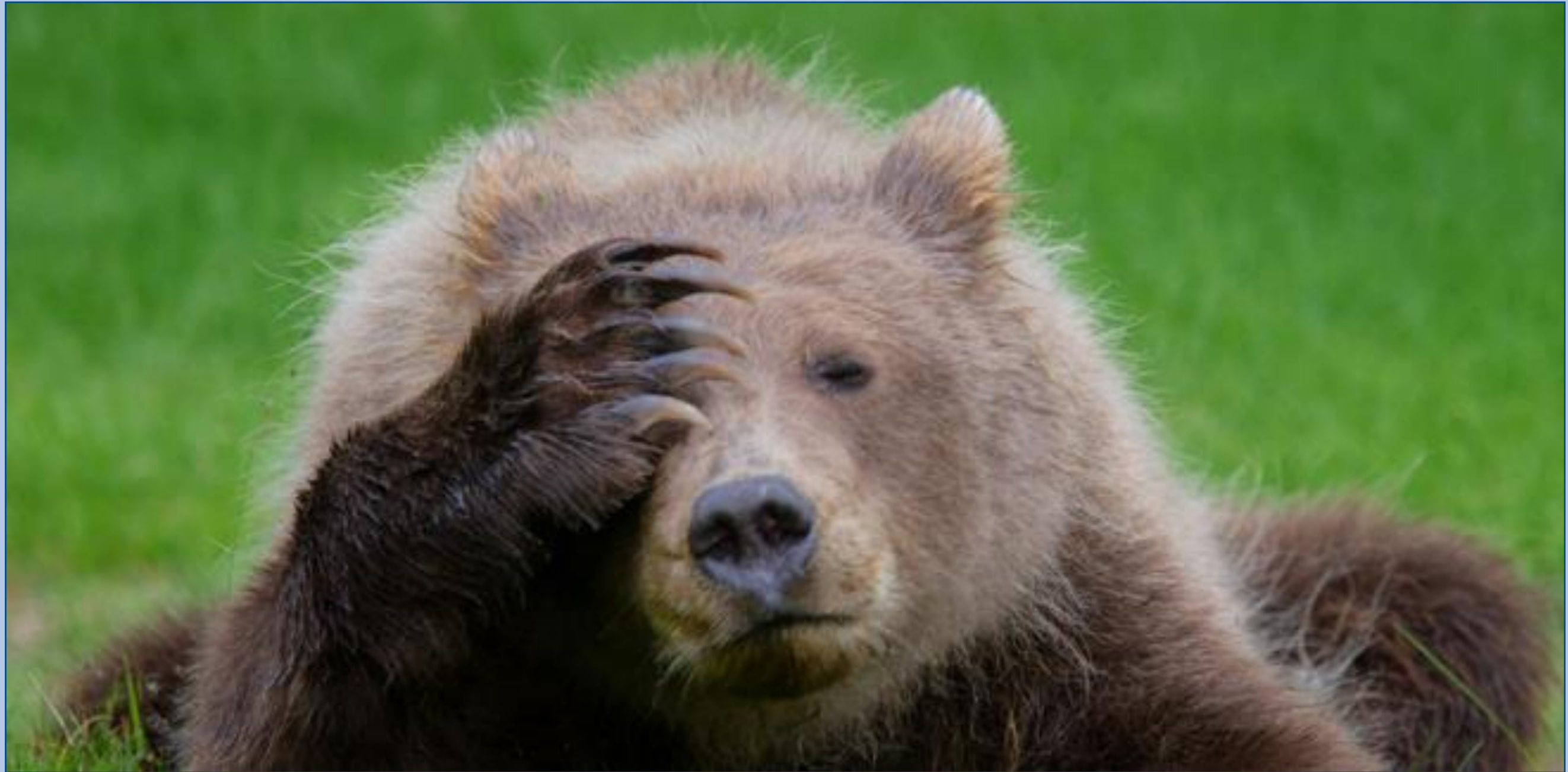


We can test the habitat loss hypothesis not only through archival work, but also by **applying habitat suitability models** for brown bears, developed in Europe and Montana, to CA. If, based on these models, **plenty of habitat remains today**, then surely it existed 100 years ago.





**10) Whether their loss was inevitable,  
and their return is impossible...**



# Take-Home Messages

- Most of what we once thought we knew about the CA grizzly has turned out to be wrong
- There is much left to learn!
- Grizzlies enriched and enlivened CA ecosystems
- Grizzlies played vital roles in CA's diverse Native cultures
- The grizzly's eradication was not inevitable—it was a choice
- Its future recovery is not impossible—it's also a choice





**California Fish and Game Commission**  
**[Draft] Resolution Recognizing the 100-year Anniversary of the**  
**Extirpation of Grizzly Bear in California**

*April 12, 2024 Draft*

**WHEREAS**, grizzly bear, also commonly known as brown bear, was once a principal inhabitant of California; and

**WHEREAS**, in California grizzly bear was a keystone species with profound ecological and cultural value and significance that once roamed freely and thrived throughout the state, filling a vital role in shaping California's ecosystems; and

**WHEREAS**, for millennia, Native American tribes of the area that is now known as California coexisted with grizzly bears, developing a deep spiritual, cultural, social, and natural relationship with these magnificent animals, which in many ways persists today; and

**WHEREAS**, grizzly bear remains an iconic and beloved symbol of California, adorning its flag and great seal, designated as the state animal, and featured prominently as mascot of many California universities, reflecting its enduring legacy; and

**WHEREAS**, due to human actions, including a campaign of eradication and government-sanctioned bounties, California grizzly bear was tragically extirpated in California, with the last confirmed sighting in Sequoia National Park in April 1924; and

**WHEREAS**, the California Fish and Game Commission, committed to "abundant, healthy, and diverse fish and wildlife that thrive within dynamic ecosystems," is entrusted together with the California Department of Fish and Wildlife with protecting and conserving California's diverse fish, wildlife, plants, and the habitats upon which they depend; and

**WHEREAS**, recognizing 2024 as *Year of the California Grizzly Bear* as proclaimed by the California State Senate, the Commission acknowledges the importance of observing this year with public education and engagement in promoting responsible wildlife interactions and ensuring a healthy future for California's invaluable wildlife.

**NOW, THEREFORE, BE IT RESOLVED**, that the California Fish and Game Commission commemorates the 100th anniversary of the grizzly bear's extirpation in California; and

**FURTHER, BE IT RESOLVED**, that the Commission urges Californians to learn about, respect, and actively participate in efforts to restore a healthy and vibrant wildlife heritage for the state.

**FINALLY, BE IT RESOLVED**, that the California Fish and Game Commission encourages reflection on the lessons learned from the loss of the California grizzly bear; may they guide us in ensuring a thriving future for all of California's wildlife.

***Proposed for adoption on April 18, 2024***