Effects of Wildfire on California's Biodiversity
- science to inform policy -

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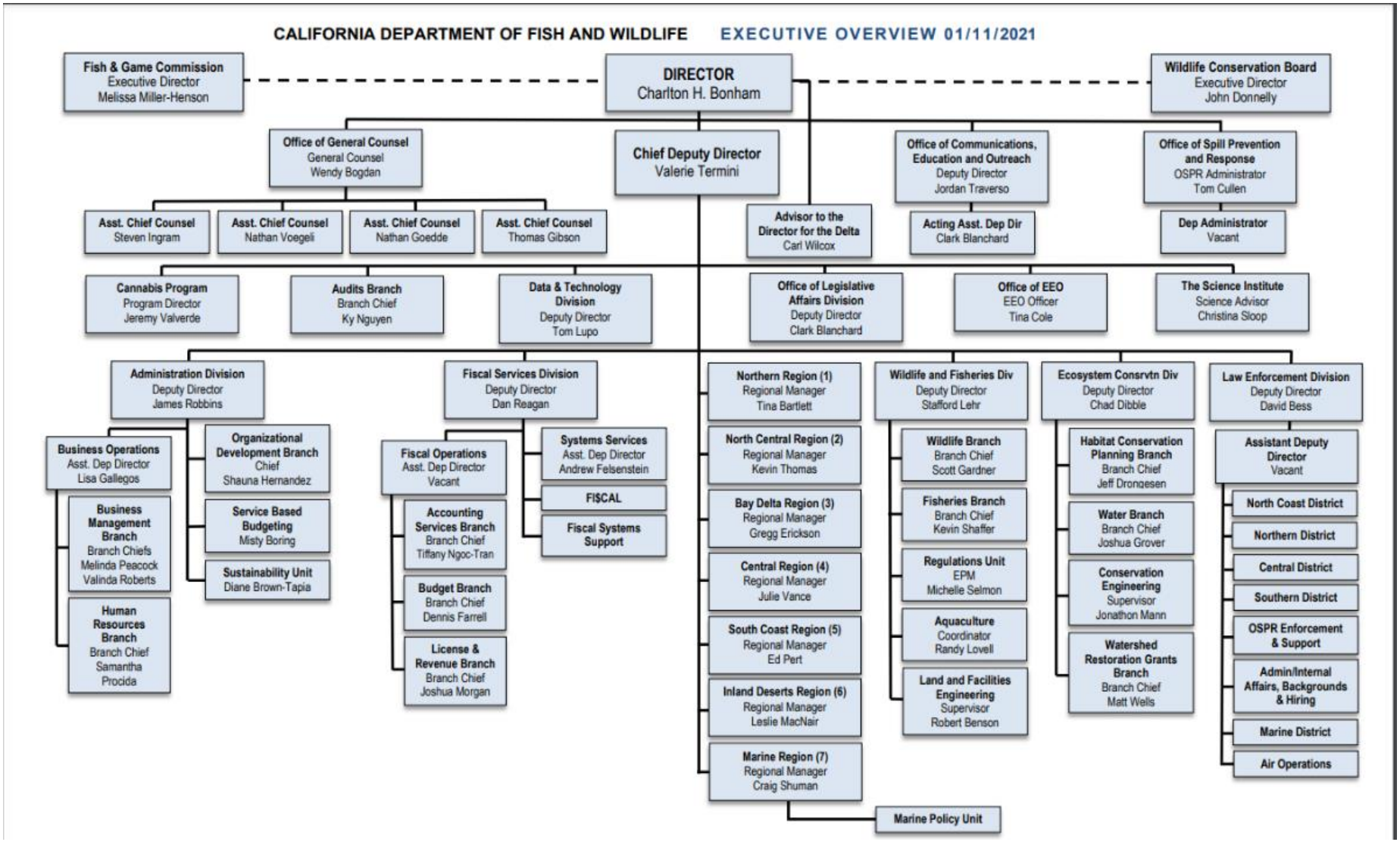
Mission Statement

The Mission of the Department of Fish and Wildlife is to manage California's diverse fish, wildlife, and plant resources, and the habitats upon which they depend, for their ecological values and for their use and enjoyment by the public.



Wildlife Health Laboratory (established in 1941)

- Leads and supports a variety of studies within CDFW
- Provide expertise in wildlife health & ecology, genetics, biostatistics, and social science

CDFW July 2020- June 2021 Budget

(6% of Natural Resource & 0.3% of State Budget)

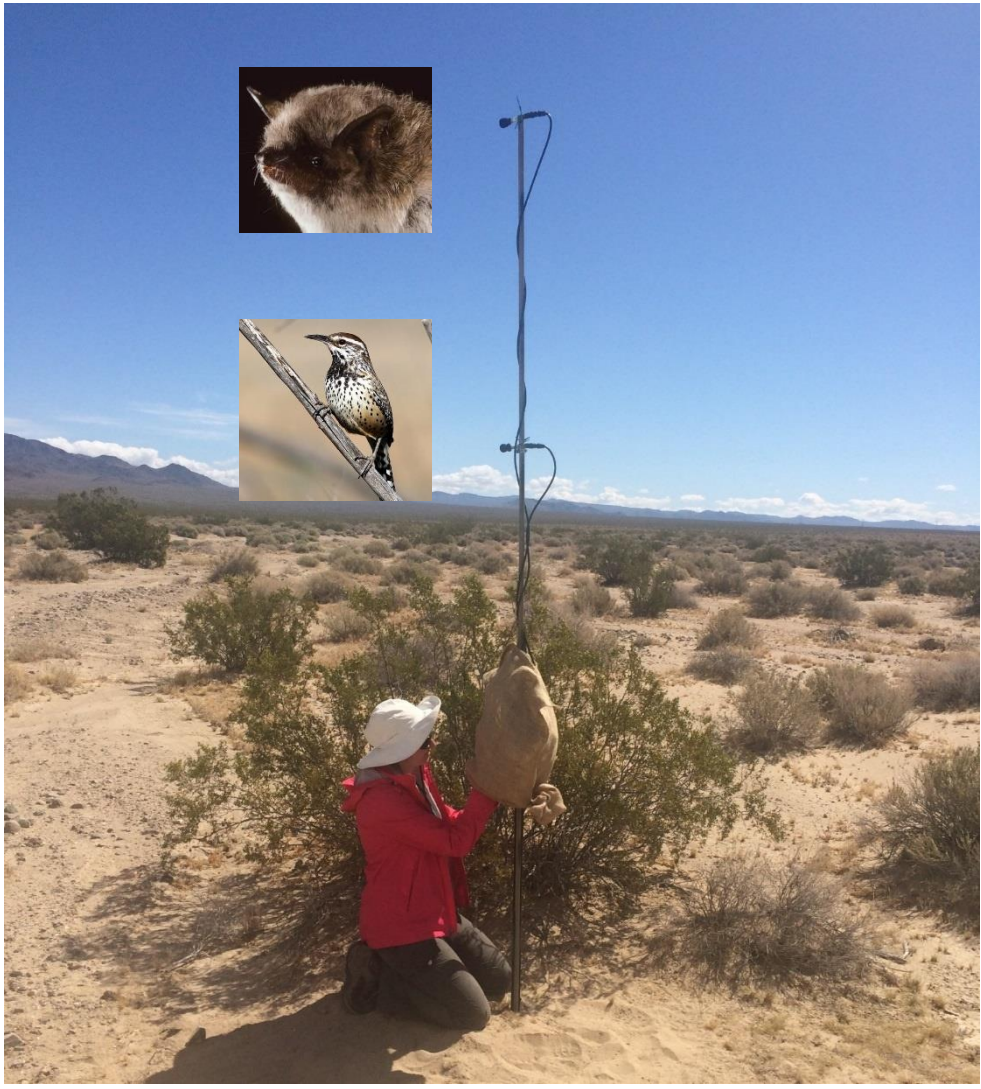
Program	Positions	%	Dollars	%
Biodiversity Conservation Program	809.9	37.1%	$276,577,000	43.6%
Hunting, Fishing, and Public Use Program	429.6	19.7%	$103,742,000	16.4%
Management of Department Lands and Facilities	366.1	16.8%	$78,907,000	12.4%
Enforcement	232.2	10.6%	$120,171,000	19.0%
Communications, Education and Outreach	23.3	1.1%	$4,910,000	0.8%
Spill Prevention and Response	168.7	7.7%	$46,898,000	7.4%
Fish and Game Commission	10.0	0.5%	$1,800,000	0.3%
Administration	141.6	6.5%	$55,024,000	
Administration - Distributed	-		$-55,024,000	8.7%
Total (excluding Infrastructure)	2,181.4		$633,005,000	
Infrastructure Expenditures			$880,000	0.1%
Total	**2,181.4**		**$633,885,000**	

Automated Sound Recorders to survey birds and bats

Olympus

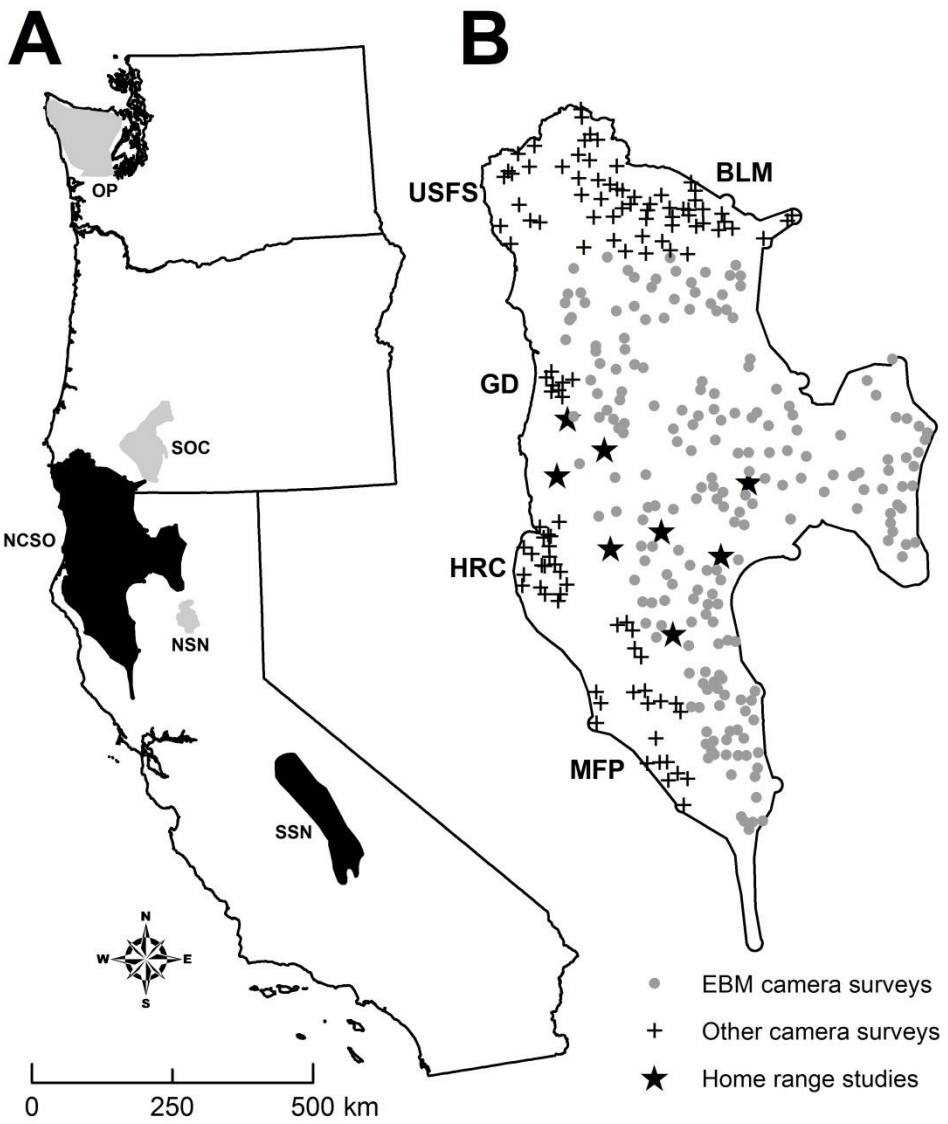
Wildlife Acoustics

Song Meter



Mojave Desert Deployment in 2016

Camera Traps to survey carnivores, deer, and small mammals



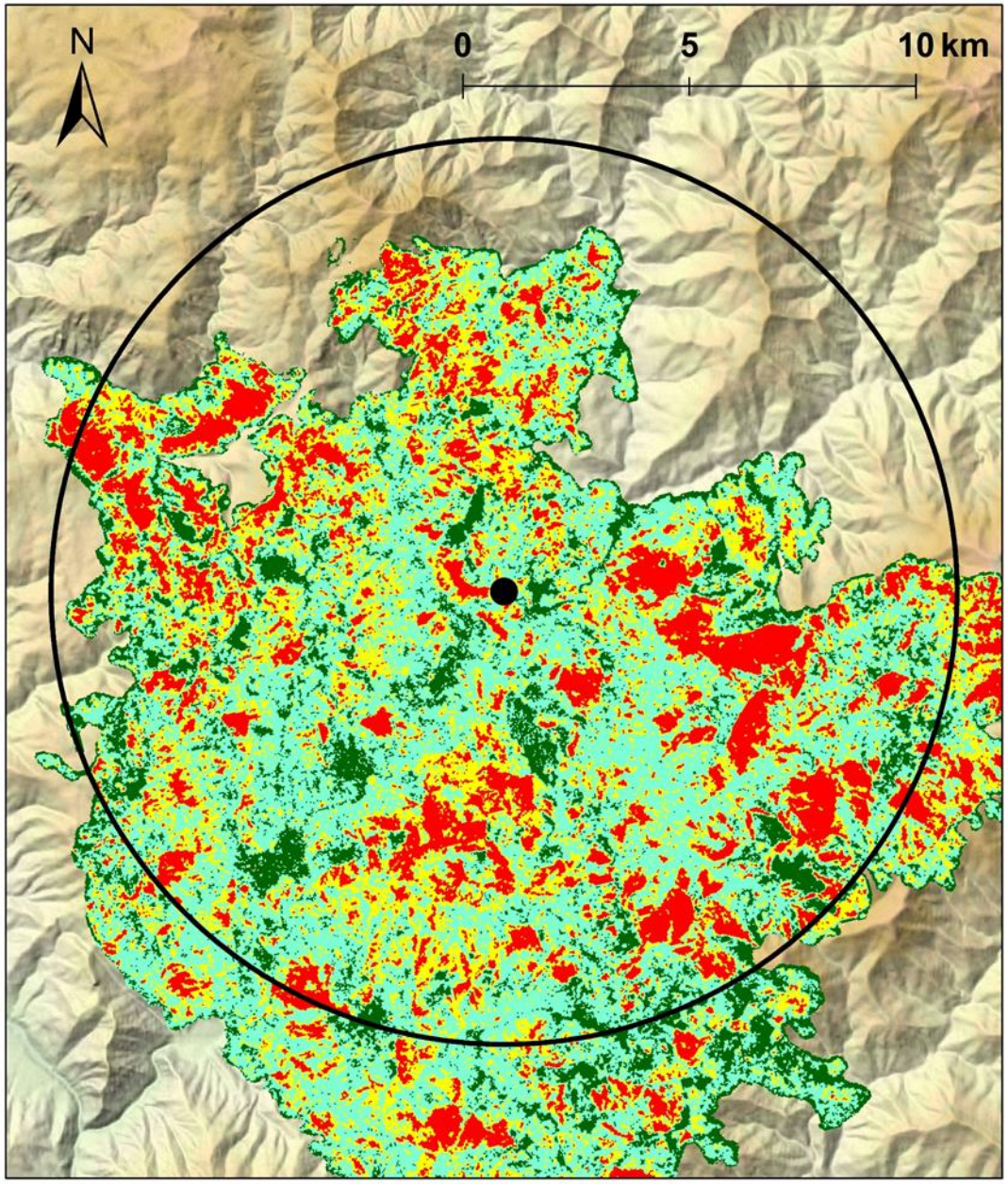
Estimated NCSO population size

3,317 fishers (95%CI: 2,592-4,356)

Examining the effects of fire on forest carnivores

Furnas et. al. 2021
Diversity and Distributions

Landscape-level Pyrodiversity



MTBS Fire Severity Layer

- Red – High
- Yellow – Moderate
- Teal – Low
- Dark Green - Unburnt

CDFW Camera Traps

Common name	Scientific name	Detection site-days	Sites detected
American Badger	*Taxidea taxus*	16	0.8%
American Black Bear	*Ursus americanus*	1,988	58.0%
American Marten	*Martes americana*	125	2.8%
Bobcat	*Lynx rufus*	151	9.4%
Coyote	*Canis latrans*	214	8.9%
Fisher	*Pekania pennanti*	359	11.0%
Gray Fox	*Urocyon cinereoargenteus*	1,894	35.6%
Raccoon	*Procyon lotor*	12	0.8%
Red Fox	*Vulpes vulpes*	9	0.01%
Ringtail	*Bassariscus astutus*	221	5.3%
Long-tailed Weasel	*Mustela frenata*	18	1.1%
Mountain Lion	*Puma concolor*	59	3.9%
Short-tailed Weasel	*Mustela erminea*	7	0.4%
Striped Skunk	*Mephitis mephitis*	329	13.4%
Western Spotted Skunk	*Spilogale gracilis*	390	2.8%

FIGURE 1 Locations of 1,451 camera trap survey sites in Northern California forests during 2009–2018. Most locations were surveyed during a single year

Scientific Findings and Policy Implications

- Forest carnivores benefit from a mix of fire severities.
- Species diversity is highest when 1–2% of landscape per year experiences low severity burning.
- Landscapes with more low than high severity burning are good for wildlife, and they also mitigate air pollution and human safety risks.
- Prescribed burning and forest thinning treatments can mimic the effects of low severity wildfire.
- The Governor's budget includes $1 billion for fire-resilient forest management including prescribed burning.