

WHERE  
THERE'S  
SMOKE

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**THE ENVIRONMENTAL SCIENCE,  
PUBLIC POLICY, AND POLITICS OF  
MARIJUANA**

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Edited by CHAR MILLER

WITH A FOREWORD BY JARED HUFFMAN

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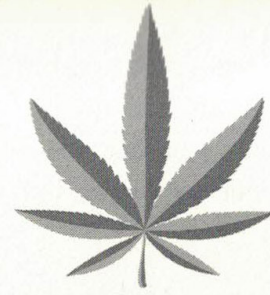
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## Ecological Impacts across the Landscape

### Trespass Marijuana Cultivation on Western Public Lands

Greta M. Wengert, Mourad W. Gabriel,  
J. Mark Higley, and Craig Thompson

*Marijuana cultivation in California:* it is a phrase that conjures up images ranging from a back-to-the-earth movement that brought people closer to the land, to pot-smoking college students, to the influx of out-of-towners to small Northern California towns looking for a piece of the vast profits being generated in the drug trade. But only recently has this phrase also come to represent an even darker side to the industry, the less well-known drawbacks to an otherwise booming industry. This darker side is the broad assemblage of environmental impacts this industry has had and continues to have on the lands and natural resources of California and other western states. Water diversions, wildlife poisonings, and clearing of habitats are now understood to be common at cultivation sites throughout California. Going more unnoticed are the covert, less visible ecological disturbances unique to marijuana cultivation hidden within California's vast public lands. Though many of the same clear hazards exist both in the more evident quasi-legal grows occurring on private parcels as well as in the trespass grows littering the public landscape, there are stark differences in the nature, detectability, and expanse of impacts between the two. When considered at the regional scale across hundreds of trespass cultivation sites on California's public and tribal lands each year, the cumulative impacts could be substantial but are, as yet, largely unexplored. Furthermore, a large portion of sites that exist on public lands are not even

## CHAPTER 3

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# Effects of Illegal Marijuana Cultivation on Wildlife

## Pesticide Exposure in a Native Carnivore and Consequences for the Species' Survival

Craig Thompson, Mourad W. Gabriel,  
Greta M. Wengert, and J. Mark Higley

In April 2009 technicians with the University of California Sierra Nevada Adaptive Management Project recovered the carcass of an adult male fisher in the Sierra National Forest just south of Yosemite National Park. As part of the project, researchers were monitoring fisher response to forest and fuel management projects in the area by tracking their movements and survival. Fishers, a large, secretive member of the weasel family, were being considered for listing under both the California and federal Endangered Species Acts, and researchers were attempting to understand how forest management, designed to reduce the prevalence of large wildfires in the western United States, would impact the species.

This particular fisher presented a bit of a mystery, however. The animal appeared young and healthy, with no telltale signs of disease or injury. Its body was completely intact, lying adjacent to a large log, ruling out predation by a larger carnivore (a common cause of death for fishers). Based on the lack of evidence in the field, the carcass was submitted to the University of California, Davis veterinary pathology lab for a full necropsy, and results indicated the animal had died of acute toxicosis associated with ingesting anticoagulant rodenticides (ARs) (Gabriel et al. 2012). Here the mystery deepened further; while there is a long history of wildlife being accidentally poisoned with ARs it is typically associated with agricultural or residential areas where landowners use the poisons to protect



Figure 3.1. Packets of rodenticide found at an illegal grow site.

*Courtesy of Hoopa Tribal Forestry*

crops or homes from damage. This animal, tracked for most of its adult life, had not gone near these areas, instead spending its time in a relatively remote section of the Sierra National Forest.

Perplexed by the source of the poison and the quantity the animal must have encountered to cause such a rapid death, researchers first began testing samples from fishers that had died of other causes and had been previously collected as part of ongoing research projects in the Sierras and northwestern California. They were astounded to realize that almost 80 percent of all fishers collected within the Sierra National Forest over the past three years tested positive for AR exposure (Gabriel et al. 2012). And they tested positive for not just one toxic compound but many compounds. A total of six different AR compounds were identified, with individual animals showing exposure to as many as four toxicants (Gabriel et al. 2012). Ultimately, the diversity of compounds identified provided a clue to the source; discussions with local law enforcement agents revealed that many of the same toxicants were being found at illegal marijuana cultivation sites located on public lands throughout California and southern Oregon.

Covert marijuana gardens on public lands are unique within the realm of wildlife ecotoxicology. Most wildlife poisoning is associated either with the use or mis-



## CHAPTER 4

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# The Marijuana Green Rush Is Anything but Green

## A Report from the Hoopa Tribal Lands

J. Mark Higley, Greta M. Wengert, Dawn M. Blake,  
and Mourad W. Gabriel

The Hoopa Valley Indian Reservation contains 144 square miles of land, includes the Trinity River and Hoopa Valley, and the Hupa people consider it the center of the world. It encompasses many of the Hupa people's ancestral village sites. The valley is home to many acres of prime agricultural land and once was considered the breadbasket of Humboldt County. The vast majority of the Hoopa Reservation, however, is mountainous, forested land rich in timber resources, water, fish, and wildlife habitat. Tribal administrators have taken great pride in developing a forest management plan and practices that balance economic needs with traditional and cultural values over the past two decades. The plan has been certified as Ecologically Sustainable by the Forest Stewardship Council since 1996. There is no pesticide or herbicide use within these forestlands. Some of those management practices may have left the door open for outsiders to exploit the reservation's natural resources for personal gain. Large-scale clandestine marijuana growing operations, often supported by drug-trafficking organizations, have sprung up on and around the reservation, leaving a path of destruction, poisons, and animal carcasses. In this chapter, we will describe how we discovered the shocking impacts of such growing operations on the Pacific fisher, a federally proposed threatened species, and the potential for threats to other wildlife that we are uncovering through our collaborative research projects.

“The topic of the environmental impact of marijuana growing is understudied and the book provides new concepts, data, and interpretations to guide both future research and policy development as well as offers a new forum for the marijuana legalization debate. It fills a glaring gap in the literature and will be foundational for future research and policy development. While there have been a relatively large number of books on the unintended consequences of marijuana prohibition and the War on Drugs, this is the first book to exclusively take a true multidisciplinary focus on an intractable public policy dilemma; either provide a massive infusion of resources to eradicate the marijuana growing sites with concomitant refurbishing of the land or legalize marijuana in order to create a new supply-side regulatory dynamic and separate the marijuana market from the current Schedule 1 illegal drug market.”

**Charles D. Kaplan**, associate dean of research, Hamovitch Center for Science in the Human Services, University of Southern California

“In *Where There’s Smoke* scholars and field experts document firsthand in painstaking detail the damages that American marijuana prohibition has brought to our ‘protected’ lands. Such environmental damage is a form of ‘blowback’, as the recent history of drug law enforcement has included taxpayer-funded aerial crop spraying campaigns abroad done with little regard to collateral damages. This volume charts some of the underappreciated consequences of marijuana prohibition’s ‘carceral ecology’, which creates a scenario of perverse incentives in which an easily grown common plant’s flowerbuds become worth their weight in gold and beyond. With contributions from marijuana law reformers, this volume is balanced and does force the reader to recognize the limits of state-level legalization to allay environmental damage when much larger forces of prohibition are still at work.”

**Sunil Kumar Aggarwal**, MD, PhD, physician-scientist and medical geographer

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