

ESPM C22AC, ANTHROPOLOGY C12AC**FALL SEMESTER 2020**

Course Title: “Fire: Past, Present and Future Interactions with the People and Ecosystems of California”

Teaching Team: Scott Stephens, ESPM Professor
 Kent Lightfoot, Anthropology Professor
 Andrew Johnson, ESPM GSI
 Katherine Siegel, ESPM GSI
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 AJ White, Anthropology GSI

Class: MWF 10-11 AM – Remote Instruction
 Discussion Sections: As Assigned

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Course Abstract:

The purpose of this class is to explore the interactions of fire with the people and ecosystems of California over the last 10,000 years. Most Californians today fear wildland fires that each year scorch millions of acres of land, cost hundreds of millions of dollars to fight, destroy human lives and property, and blacken aesthetically pleasing landscapes; the 2017 and 2018 Northern California fires are telling examples of this perspective. Yet people have not always lived in dread of fire conflagrations. Indigenous populations learned to live with fire over many centuries and to make constructive use of it to enhance the diversity, quantity, and sustainability of plant and animal communities. Some Spanish, Mexican, and early American colonists employed prescribed burning to enhance grazing and timber lands in some areas of the state. This class emphasizes how our interactions with wildfires in California have changed dramatically over the centuries, and that there is much that can be learned from earlier fire management strategies – some of which may be applicable to our contemporaneous world.

The course will provide a historical perspective on human-fire interactions at the landscape scale using a diverse range of data sources drawn from the fields of fire ecology, biology, forestry, history, anthropology, and archaeology. The goal is to examine how diverse populations in California have related to wildland fires, and how some groups employed fire to shape and alter local ecosystems. We will begin with the earliest evidence of human-wildfire interactions that date back to the Late Pleistocene and Early Holocene. We will then explore how fire was used by Native Californians in Late Holocene and Historic times to create rich mosaics of habitats across local regions. High biodiversity, in turn, provided local communities with a cornucopia of foods, medicines, and raw materials for clothing, baskets, houses, dance regalia, and other cultural objects. Some scholars argue these landscape practices were analogous, in many ways,

to those employed by Native farmers elsewhere in North America. Some would also argue that the long-term survival of specific types of habitats in California, including grasslands, oak woodlands, wetlands, and montane meadows, are ultimately dependent on indigenous management methods in order to maintain their health and vigor. We will explore this idea in the class.

We will then examine how Spanish, Mexican, Russian, and early American colonists in California interacted with fire and how it was employed to facilitate grazing lands for thousands of head of livestock and in early forest management and conservation. A significant portion of the course will focus on the historical development of fire suppression policies enacted by the federal and state governments over the last century. The implications of these fire suppression policies will be analyzed and the consequences they have for propagating catastrophic fires today will be explored. We will also consider recent changes in the practices of government agencies that are moving away from fire suppression policies to that of the strategic use of prescribed burning and managed wildfire to control fuel loads and increase the biodiversity and sustainability of wildlands. We plan to relate this section of the class to recent fires in California, particularly the devastating 2017 North Bay fires and 2018 Paradise fire. Finally, we will consider how contemporaneous Native Californian tribes are attempting to re-deploy fire to enhance biodiversity, control intrusive species, revitalize indigenous cultural practices, and maintain food security. We will discuss on-going projects involving indigenous scholars and public resource agencies in four regions of the state: Northwest California (Karuk, Yurok territory), the Sierra Nevada (Mono territory), Central California (Amah Mutsun territory) and Southern California (Chumash, Shoshone territory).

The course will present case studies from California to highlight how diverse human populations (Native California, Spanish, Mexican, Russian, American) have interacted with fire and the consequences this has had on local landscapes and ecosystems. Case studies will focus on past and present Native Californian tribes, Spanish missions, Mexican ranchos, American farms and ranches, private timber lands, and government agencies, including the National Park Service, US Forest Service, and California State Parks. Guest speakers, including tribal scholars and government resource managers, will provide insights to the class about current perspectives about fire and various kinds of fire management practices.

Prerequisites: None

Participation: Most lectures will be presented synchronously from 10:10-11:00 am on MWF. Participation in the lectures is not mandatory and attendance will not be taken. Lectures will be recorded for downloading and viewing anytime. The synchronous lectures will provide students the opportunity to ask questions concerning lectures given by the core faculty and guest speakers.

All enrolled students must be signed up for a Discussion Section. Your Discussion Section will be presented synchronously as listed in the Schedule of Classes. Participation at this time is required and attendance will be taken

Course Requirement: Three exams required (two midterms and a final exam), a research paper (6-7 pages, typed, double space), and participation in weekly discussion sections. The final and midterm exams will be take-home exams. Participation in weekly discussion sections is mandatory. Each student is responsible for signing up for a discussion section listed in the Schedule of Classes. The class grade will be based on participation in the discussion section (20%), the two midterm exams (20% each), the final exam (20%), and research paper (20%). The purpose of the research paper is to have students select an issue concerning fire in California that they will investigate in some detail using available archival/library documents. Students will write up their observations in a 6-7 pages paper (due in the last GSI section of the semester). If you are late turning in your research paper, then you will be docked 5% for every day it is late. **Please note that more information on the research paper and any deadlines for sub-assignments concerning the paper will be presented in your GSI sections!**

GRADING:

The course grade will be based on:	<u>Total (%)</u>	<u>Grade</u>	<u>Standards</u>
1. Two Midterms -- 20% each	40	A =	90-100%
2. Discussion	20	B =	80-90%
3. Research Paper	20	C =	70-80%
4. Final Exam	20	D =	60-70%
		F =	< 60%

(+ and – grades given +/- 2% of thresholds)

MIDTERM EXAM DATES: First Midterm **Oct 2**; Second Midterm **Oct 28**

FINAL EXAM DATE: **Dec 14**

If you are going to miss an exam you must let one of the instructors know in advance. It may not be possible to schedule make-up exams but we can talk about it. If you miss an exam without first talking with the instructor, it will not be possible to make it up and you will get a 0 (emergencies excluded).

Discussion Sections: Students must sign up for a discussion section or risk being dropped from the course. Discussion sections are an important component of the course and you are expected to attend them. Discussion section assignments must be turned in on time to receive full credit. You will be docked 5% for every day your GSI assignments are late. Remember that performance in the discussion sections will count for 20% of your course grade.

Course Outline:

- Week 1: Introduction to the Class, Goals of the Course
- Aug 26: Go over syllabus, answer questions
Aug 28: Short overview on fire in CA
- Week 2: Overview: The Earliest Evidence of Wildland Fires; Early Human Interactions with Fire Beyond California. Our goal this week is to place the human use of fire in California into a broader geochronological framework.
- Aug 31 Begin History of Fire
Sept 2: History of Fire
Sept 4: Guest: Tim Gill
- Week 3 The Study of Historical Fire Records in California: Dendroecology, Phytoliths, Pollen, Charcoal (Introduce Field of Historical Fire Ecology). Our goal this week is discuss some of the research methods employed in the study of past fire regimes and how these are being employed in California today.
- Sept 7: Labor Day (Holiday)
Sept 9: Methods
Sept 11: Introduce Basic Ecosystems of CA
- Week 4: Introduction to Native California and indigenous landscape management practices. Our goal this week is to discuss the different kinds of management practices employed by Native peoples to enhance the productivity, diversity, and sustainability of plants and animals they depended on for food, medicine, dance regalia, and raw materials for craft production. We will introduce cultural/ anthropogenic burning practices as employed by Native Californian communities. We will also examine different perspectives about the timing and scale of cultural burning by Native populations in California.
- Sept 14: Brief Introduction to Native California; Kinds of indigenous management practices
Sept 16: Debate about the scale and timing of anthropogenic Burning
Sept 18: Guests: Jennifer Sowerwine and Thomas Carlson
- Week 5: The goal this week is to examine the methods and challenges of studying cultural burning in California employing multiple lines of evidence (tribal histories, ethnography, ethnohistory, eco-archaeology). We will introduce case studies from coastal California and the Sierra Nevada Mountains that are examining evidence for cultural burning by tribal communities in ancient and historical times.

Sept 21: Study of indigenous landscape management practices
 Sept 23: Eco-archaeological research in California
 Sept 25: Guest: Rob Cuthrell

Week 6: Colonialism and the Changing Use of Fire: Indigenous, Spanish, Mexican, and Russian Interactions with Fire. The goal this week is to highlight interactions between Native populations and colonists in California and how these entanglements affected indigenous landscape management practices, particularly cultural burning. We examine how tensions between ethnic groups influenced fire practices and policies in early colonial times. While some Spanish, Mexican, and Russian colonists employed prescribed burning to enhance grazing and timberlands, they specifically prohibited Native peoples from actively setting fires.

Sept 28: Issues of colonialism
 Sept 30: Guest: Corrina Gould
Oct 2: FIRST MIDTERM EXAM

Week 7: American Period Ranchers and Timber Owners and Fire. For this week, we discuss how some American ranchers continued to employ prescribed burning to augment the grazing potential of their lands. Timber companies also used fire in various ways, including broadcast burning in the early 1900's. There is some evidence that ranchers in central California may have employed indigenous people to implement their prescribed burns.

Oct 5: Timber owners and early use of fire
 Oct 7: Early Foresters and Fire
 Oct 9: Guest: Frank Lake

Week 8: Fire Suppression Policies of the US Government and State of California in Late 19th and 20th Centuries. This week will focus on the development of the fire suppression policies that were implemented by federal and state government agencies. We will examine the implications that these policies had for local California ecosystems.

Oct 12: Outline fire suppression policies of US/CA governments
 Oct 14: Implications for local ecosystems (fuel load, fire risks!)
 Oct 16: Guest: Jameson Karns

Week 9: American Period Colonization and Its Impacts on Native Californians. We present the broader context of American Period settler colonialism that proved devastating to both California Indian populations and many native ecosystems of California in the late 19th and 20th centuries. By preventing indigenous people from practicing their traditional subsistence activities, American settlers created an unbearable situation for those Native people who attempted to live off the land. We examine how fire suppression policies were

part of a broader package of American practices that led to a dire situation for California Indians: genocide, loss of ancestral lands, minimal access to Native foods and goods, and their exclusion from the management of public lands.

Oct 19: Settler Colonialism in the American Period

Oct 21: Implications of Settler Colonialism on Tribes

Oct 23: Guest: Ron Goode

Week 10: Post-Fire Suppression Practices. The lecture and readings for this week will examine recent changes in the practices of government agencies that are moving away from fire suppression policies to that of the strategic use of prescribed burning to control fuel loads and increase the biodiversity of wildlands. We will highlight how some government agencies, working in close collaboration with Native populations and other diverse communities in California, are re-deploying fire to enhance biodiversity, to control invasive species, and to reduce the risks of major, destructive wildfires.

Oct 26: Forest Restoration and the Leopold Report

Oct 28: SECOND MIDTERM EXAM

Oct 30: Guest: Jan van Wagendonk

Week 11: Examples of Prescribed Burning and Managed Lightning Fire in California. The purpose for this week is to provide some case studies of how prescribed fire is being employed in different ecosystems of California, as well as in Florida.

Nov 2: How to plan for prescribed burning, comparison with Florida

Nov 4: Managed wildfire effects on water and forest health

Nov 6: Guest: Brandon Collins

Week 12: Contemporaneous Perspectives about Fire from Native Californian Tribes. This week will be devoted to examining how fire and other stewardship practices are being employed by tribes to revitalize local ecosystems and indigenous cultural practices, including the harvesting of native plants for food, medicines and basket material. We will explore how lessons from past indigenous practices may provide new insights for the contemporary management of public spaces that are rooted in the deep history of Native Californians.

Nov 9: Outcomes of Colonialism on California Tribes

Nov 11: Veterans Day (Holiday)

Nov 13: Guest: Val Lopez

Week 13: The Future of Human-Fire Interactions in California. Our goal for this week is to discuss some of the directions we may want to pursue for rethinking how we care for our public lands. For example, what are the challenges of integrating contemporary forest and range management protocols with some of the practices that involve traditional indigenous knowledge about fires? How feasible is it to

have tribal groups and other stakeholders work with federal and state agencies in the management of public lands?

Nov 16: Tribal Renaissance and Future Perspectives about fire

Nov 18: Rethinking the Stewardship/Care of the California Landscape from a Tribal Perspective

Nov 20: Guest: Patrick Gonzalez

Week 14: North Bay Area fires and the Wildland-Urban Interface. We examine the North Bay firestorms of 2017 and 2018 Camp Fire as case studies of how firestorms can have significant impacts on local ecosystems and on people from diverse backgrounds, wealth, and ethnicity.

Nov 23: North Bay and Camp Fires: What have we learned?

Nov 25: Non-Instructional Day

Nov 27: Holiday (Thanksgiving)

Week 15: Current California initiatives concerning wildfires. Course Conclusion

Nov 30: Current California Initiatives concerning wildfires:
Interesting times

Dec 2: Summarize main points of class

Dec 4: Final Comments

Week 16: Reading/Review/Recitation Week

Dec 7: Review Session for Final Exam

Week 17: **FINAL EXAM: Dec 14**

REQUIRED READINGS

Week 1: Introduction to the Class, Goals of the Course

Bowman, David MJS

2014 What is the Relevance of Pyrogeography to the Anthropocene? *The Anthropocene Review*:1-4.

Bowman, David MJS, Jennifer Blach, Paulo Artaxo, William J. Bond, Mark A. Cochrane, Carla M. D'Antonio, Ruth DeFries, Fay H. Johnston, Jon E. Keeley, Meg A. Krawchuk, Christian A. Kull, Michelle Mack, Max A. Moritz, Stephen J. Pyne, Christopher Roos, Andrew C. Scott, Navjot Sodhi and Thomas W. Swetnam

2011 The Human Dimension of Fire Regimes on Earth. *Journal of Biogeography* 38:2223-2236.

Pyne, Stephen J.

2016 *California: A Fire Survey*. University of Arizona Press, Tucson. Prologue pp 1-16.

Week 2: Overview: The Earliest Evidence of Wildland Fires; Early Human Interactions with Fire Beyond California

Pausas, Juli G. and Jon E. Keeley

2009 A Burning Story: The Role of Fire in the History of Life. *Bioscience* 59(7):593-601.

Pinter, Nicholas, Stuart Fiedel and Jon E. Keeley

2011 Fire and Vegetation Shifts in the Americas at the Vanguard of Paleoindian Migration. *Quaternary Science Reviews* 30:269-272.

Ruddiman, William F., Erle C. Ellis, Jed O. Kaplan and Dorian Q. Fuller

2015 Defining the Epoch We Live In: Is a Formally Designated "Anthropocene" a Good Idea? *Science* 348(6230):38-39.

Week 3 The Study of Historical Fire Records in California: Dendroecology, Phytoliths, Pollen, Charcoal (Introduce Field of Historical Fire Ecology)

Anderson, R.S. and S.L. Carpenter

1991 Vegetation Change in Yosemite Valley, Yosemite National Park, California, during the Protohistoric Period. *Madrono* 38(1):1-13.

Lepofsky, Dana and Ken Lertzman

2008 Documenting Ancient Plant Management in the Northwest of North America. *Botany* 86:129-145.

Pyne, Stephen J.

2016 *California: A Fire Survey*. University of Arizona Press, Tucson. pp 67-85.

Taylor, A, V. Trouet, C. Skinner, and S. Stephens. 2016. Socio-Ecological Transitions Trigger Fire Regime Shifts and Modulate Fire-Climate Interactions in the Sierra Nevada, USA 1600-2015 CE. *Proceedings of the National Academy of Science* 113:13684-13689.

Week 4: Introduction to Indigenous Landscape Management Practices: Anthropogenic Burning

Anderson, M. Kat

2005 *Tending the Wild: Native American Knowledge and the Management of California's Natural Resources*. University of California Press, Berkeley. Introduction (pp 1-10), Chap 4 (pp 125-154).

Barrett, Stephen W., Thomas Swetnam and William L Baker

2005 Indian Fire Use: Deflating the Legend. *Fire Management Today* 65(3):31-34.

Lightfoot, Kent G. and Otis Parrish

2009 *California Indians and their Environment: An Introduction*. University of California Press, Berkeley. Pp. 2-36.

Lightfoot, Kent G., Rob Q. Cuthrell, Chuck J. Striplen and Mark G. Hylkema

2013 Rethinking the Study of Landscape Management Practices Among Hunter-Gatherers in North America *American Antiquity* 78(2):285-301.

Vale, Thomas R.

1998 The Myth of the Humanized Landscape: An Example from Yosemite National Park. *Natural Areas Journal* 18(3):231-236.

Week 5: Eco-Archaeological Investigations of Anthropogenic Burning: Evidence of Indigenous Management Practices?

Cuthrell, Rob Q.

2013 Archaeobotanical Evidence for Indigenous Burning Practices and Foodways at CA-SMA-113. *California Archaeology* 5(2):265-290.

Gassaway, Linn

2009 Native American Fire Patterns in Yosemite Valley: Archaeology, Dendrochronology, Subsistence, and Culture Change in the Sierra Nevada *Society for California Archaeology Proceedings* 22:1-19.

Keeley, Jon E.

2002 Native American Impacts on Fire Regimes of the California Coastal Ranges. *Journal of Biogeography* 29:303-320.

Lightfoot, Kent G. and Valentin Lopez

2013 The Study of Indigenous Management Practices in California: An Introduction. *California Archaeology* 5(2):209-219

Week 6: Colonialism and the Changing Use of Fire: Indigenous, Spanish, Mexican, and Russian Interactions with Fire

Anderson, M. Kat

2005 *Tending the Wild: Native American Knowledge and the Management of California's Natural Resources*. University of California Press, Berkeley. Chaps 3, pp 62-82

Crosby, Alfred W.

2004 *Ecological Imperialism: The Biological Expansion of Europe, 900-19000*. Second Edition ed. Cambridge University Press, Cambridge. Read Chap 7, pp 145-170.

Dartt-Newton, Deana and Jon M. Erlandson

2006 Little Choice for the Chumash: Colonialism, Cattle, and Coercion in Mission Period California. *American Indian Quarterly* 30(3 and 4):416-430.

Lopez, Valentin

2013 The Amah Mutsun Band: Reflections on Collaborative Archaeology. *California Archaeology* 5(2):221-223.

Timbrook, Jan, John R. Johnson and David D. Earle

1993 Vegetation Burning by the Chumash. In *Before the Wilderness: Environmental Management by Native Californians*, edited by T. C. Blackburn and K. Anderson, pp. 117-149. Ballena Press, Menlo Park, California.

Week 7: American Period Ranchers and Timber Owners and Fire

Lake, Frank K., J.A. Parrotta, C.P. Giardian, I. Davidson-Hunt, and Y. Uprety

2018 Integration of Traditional and Western Knowledge in Forest Landscape Restoration. In *Forest Landscape Restoration: Integrated Approaches to Support Effective Implementation*, edited by S. Mansourian, and J. Parrotta, pp. 198-226. Routledge, New York.

Petersen, Jim. 1994. The 1910 Fire. *Evergreen Magazine*, Winter Edition 1994-1995. 6 pages.

Pyne, Stephen J.

2016 *California: A Fire Survey*. University of Arizona Press, Tucson. Fire use by early California private timber owners. pp 125-154.

Stephens, Scott L. and Neil G. Sugihara

2018 Fire Management and Policy Since European Settlement. In *Fires in California's Ecosystems*, edited by J. W. van Wagtendonk, N. G. Sugihara, K. E. Shaffer, S.L. Stephens, J. Fites-Kaufman and A. E. Thode, University of California Press, Berkeley, California (in press).

Walker, Clinton. 1938, 1939. Correspondence of the Red River Lumber Company, Westwood, CA. 4 pages.

Walker, T.B. 1913. Correspondence of the Red River Lumber Company, Westwood, CA. 2 pages

Week 8: Fire Suppression Policies of the US Government and State of California

Stephens, Scott L., Robert E. Martin and Nicholas E. Clinton. 2007. Prehistoric Fire Area and Emissions from California's Forests, Woodlands, Shrublands, and Grasslands. *Forest Ecology and Management* 251:205-216.

Kenney, Nathaniel. 1956 (3). The green treasury, the National Forests. *National Geographic Magazine*, September, 1956. Pages 287-324.

Stephens, S.L., Lydersen, J.M., Collins, B.M., Fry, D.L., Meyer, M.D. 2015. Historical and current landscape-scale ponderosa pine and mixed-conifer forest structure in the Southern Sierra Nevada. *Ecosphere* 6(5): 1-20.

North, M.P., B.M. Collins, and S.L. Stephens. 2012. Using fire to increase the scale, benefits and future maintenance of fuels treatments. *Journal of Forestry* 110(7):392-401

Week 9: Implications of American Period Policies on Ecosystems and People

Anderson, M. Kat

2005 *Tending the Wild: Native American Knowledge and the Management of California's Natural Resources*. University of California Press, Berkeley. Chaps 3, pp 82-121

Goode, Ron W.

2015 Tribal-Traditional Ecological Knowledge. *News from Native California* Spring 2015:23-28.

Johnson, Eric Michael

2014 Fire Over Ahwahnee: John Muir and the Decline of Yosemite. *Scientific American*
<http://blogs.scientificamerican.com/primate-diaries/201408/13/fire-over-ahwahnee-john-muir-and-the-decline-of-yosemite/>.

Lightfoot, Kent G.

2005 *Indians, Missionaries, and Merchants: The Legacy of Colonial Encounters on the California Frontiers*. University of California Press, Berkeley, California. Read Chapter 8, pp 210-233.

Madley, Benjamin

2016 *An American Genocide: The United States and the California Indian Catastrophe*. Yale University Press, New Haven, Connecticut. Read Introduction, pp 1-15

Ortiz, Beverly R.

2018 Ron Goode: A Life Lived in Service to Community and Environment. *News from Native California* 31(3 (Spring):18-26.

Week 10: Post-Fire Suppression Practices and Policies

Leopold, S. A., S. A. Cain, C. A. Cottam, I. N. Gabrielson, and T. L. Kimball. 1963. Wildlife management in the National Parks. *American Forestry* 69:32–35; 61–63.

Sneeuwjagt, R.J., T.S. Kline, and S.L. Stephens. 2013. Opportunities for improved fire use and management in California: lessons from Western Australia. *Fire Ecology* 9(2): 14-25. (doi: 10.4996/fireecology.0902014)

Pyne, Stephen. *California: A Fire Survey*, pgs 167-176. Vignettes of Primitive America.

Week 11: Recent Examples of Prescribed Burning and Managed Lightning Fire in California

Boisramé, G., Thompson, S., Collins, B., & Stephens, S. 2017. Managed Wildfire Effects on Forest Resilience and Water in the Sierra Nevada. *Ecosystems* 20: 717–732.

Stephens, S.L. S.J. Husari, H.T. Nichols, N.G. Sugihara, and B.M. Collins. 2018. Fire and Fuel Management. In: *Fire in California Ecosystems*, 2nd Edition. van Wagendonk, J., N.G. Sugihara, S.L. Stephens, A.E. Thode, K.E. Shaffer, and J. Fites-Kaufman (Editors). University of California Press, Berkeley, CA. Pgs. 411-428.

Kobziar LN, Godwin D, Taylor L, Watts AC. 2015. Perspectives on trends, effectiveness, and impediments to prescribed burning in the Southern U.S. *Forests* 6: 561–580.

Week 12: Contemporaneous Perspectives about Fire from Native Californian Tribes

Codero-Lamb, Julie, Jared Dahl Aldern and Teresa Romero
2018 Bring Back the Good Fires. *News from Native California* 31(3 (Spring):14-17.

Fowler, Catherine S., P. Esteves, G. Goad, B. Helmer and K. Watterson
2003 Caring for the Trees: Restoring Timbisha Shoshone Land Management Practices in Death Valley National Park. *Ecological Restoration* 21(4):302-306.

Gilles, Nathan
2017 Wildfires are Essential: The Forest Service Embraces a Tribal Tradition. *Yes! Magazine* (<http://www.yesmagazine.org/issues/science/wildfires-are-essentail-the-forest-service-embraces-a-tribal-tradition-2017043>).

Hannibal, Mary Ellen
2016 Rekindling the Old Ways: The Amah Mutsun and the Recovery of Traditional Ecological Knowledge *Bay Nature* April-June 2016:28-35.

Terence, Malcolm
2016 Unleashing the TRES: Why Officials Think Controlled Burns Can Save California from Wildfire. *North Coast Journal* (<http://www.northcoastjournal.com/humboldt/unleashing-the-trex/content?oid=4132514>).

Week 13: The Future of Human-Fire Interactions in California

Anderson, M. Kat and Michael G. Barbour

2003 Simulated Indigenous Management: A New Model for Ecological Restoration in National Parks. *Ecological Restoration* 21(4):269-277.

Marks-Block, Tony, Frank K. Lake, and Lisa M. Curran

2019 Effects of Understory Fire Management Treatments on California Hazelnut, An Ecocultural Resource on the Karuk and Yurok Indians in the Pacific Northwest. *Forest Ecology and Management* 450:1-12.

Harvey, Brian

2016 Human-caused climate change is now a key driver of forest fire activity in the western United States. *Proceedings of the National Academy of Science* 113: 11649-11650

Lake, Frank K., Vita Wright, Penelope Morgan, Mary McFadzen, Dave McWethy and Camille Stevens-Rumann

2017 Returning Fire to the Land: Celebrating Traditional Knowledge and Fire. *Journal of Forestry* 115(5):343-353.

Lightfoot, Kent G., Rob Q. Cuthrell, Cristie M. Boone, Roger Byrne, Andrea B. Chavez, Laurel Collins, Alicia Cowart, and R. Evett, Fine V.A. Paul, Diane Gifford-Gonzalez, Mark G. Hylkema, Valentin Lopez, Tracy M. Misiewicz and Rachel E. B. Reid

2013 Anthropogenic Burning on the Central California Coast in Late Holocene and Early Historical Times: Findings, Implications, and Future Directions. *California Archaeology* 5(2):371-390.

Week 14: 2017 North Bay Area fires and the Wildland-Urban Interface

Stephens S. L., M. Adams, J. Hadmer, F. Kearns, B. Leicester, J. Leonard, M. Moritz. 2009. Urban-wildland fires: how California and other regions of the US can learn from Australia. *Environmental Res. Letters* 4 014010 5pgs.

Pyne, S. 2017. How California Changed the Way the World Fights Fires. Essay, 5 pages;

Kramer, Heather A., Miranda H. Mockrin, Patricia M. Alexandre and Volker C. Radeloff. 2019. High wildfire damage in interface communities in California. *International Journal of Wildland Fire* 28: 641-650.
<https://doi.org/10.1071/WF18108>

Gill, A.M., and S.L. Stephens. 2009. Scientific and social challenges for the management of fire-prone wildland-urban interfaces. *Environmental Research Letters* 4 034014. 10 pages.

Week 15: Current California Initiatives Concerning Wildfires. Conclusion

Stephens, S.L., B.M. Collins, E. Biber, and P. Fule. 2016. US Federal fire and forest policy: Emphasizing resilience in dry forests. *Ecosphere* 7(11):1-19.

North, M., S.L. Stephens, B.M. Collins, J.K. Agee, G. Aplet, J.F. Franklin, and P.Z. Fulé. 2015. Reform forest fire management: Agency incentives undermine policy effectiveness. *Science* 18: 1280-1281.

Stephens, S.L. 2017, 2018. Hearing briefings for invited testimony to the California Assembly and California Senate regarding fire and fuels management in California. 8 pages.