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A Political Ecology of Eastern Red Cedar in Oklahoma

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This paper reflects on fieldwork conducted from March 11-15th, as well as, research beyond these exact dates with farmers and ranchers in Southeastern Oklahoma. The focus of this work was to assess USDA conservation practices and their linkages with the social dimensions of resilience in rural life. Based on fieldwork and interviews, discourse has varied between conservationists/environmentalists and farmers. Invasive species management and fire ecology emerged as key points of interest which this paper took up as a side project. The Natural Resources and Conservation Service promoted Eastern Red Cedar, a highly invasive tree during the dust bowl as a best management practice for preventing soil erosion by serving as wind break. Now, in Oklahoma, the removal, extermination and potential marketization of Eastern Red Cedar has become a top conservation priority for land manager and farmers alike, given the urgent need for policy solutions that address the problem of devastating wildfires and the impact Eastern Red Cedar has had combined with drought and consuming substantial amount of groundwater. Understanding mixed and forgotten histories, as well as, analyzing current misreadings and re-articulations of problems remains important for assessing current public policy practices and options.

Introduction

Drought has become a major problem for millions of farmers and ranchers throughout the United States. In recent years, nowhere has this been more apparent than in the State of Oklahoma where many changes have occurred in the local micro-climate and have led to increased wildfires. The current state of drought and wildfires in Oklahoma has resurrected many old and recent debates about soil erosion, fire ecology and invasive species management. Eastern Red Cedar is an evergreen tree species native to 39 states and all but four of Oklahoma's 77 counties (Oklahoma Forestry Services 2014: 1). For many of the indigenous farmers and ranchers of Oklahoma, Eastern Red Cedar has had a mixed history intertwined with environmental crisis, state power, and leadership of federal land managers dictating best practices for managing soil and suppressing fire. Historical narratives and assumptions about conservation practices and fire ecology in Southeastern Oklahoma have been shaped through the uses and misuses of Eastern Red Cedar.

History

Prior to the European settlement of the Great Plains, rangeland fires were commonly caused by natural occurrences, such as, lightning strikes, or through human ingenuity by intentional ignitions by Native Americans (Smith 2011:2). With an increase in mechanized agricultural practices and the dependence of farmers and ranchers in the Great plains on management practices that overgrazed and plowed the land excessively, environmental conditions such as nutrient depletion and soil erosion led to the Dust Bowl (Baumhardt 2003:

187). Essentially, the problem causing the Dust Bowl was the U.S. government's attempt to impose farming practices suitable for more humid ecosystems in the Semiarid Great Plains (Baumhardt 2003: 187). Many of these state-led farming practices were driven by incentives in a broader global food system that incentivized production over production to feed consumers in Europe, as well as, manage the food supply when prices plummeted. The 1862 federal homesteading policy encouraged over utilization of pasture and cultivated land through the allocation of small allotments of farmland incompatible with ecosystems for farming and conservation in the Great Plains region (Baumhardt 2003: 188).

During and shortly after the Dust Bowl, the Natural Resource Conservation Service (NRCS) and state natural resource departments began promoted eastern red cedar for its use as a "windbreak," a common management practice of planting trees of shrubs at the edge of farm fields to protect the land from soil erosion. The natural characteristics of the Eastern Red Cedar tree make it an excellent candidate for reducing wind erosion (Smith, 2011: 5). Now, Eastern Red Cedar consumes more than 300,000 acres a year, costs US$200,000 or more. As of 2002, the USDA NRCS estimates that eight million acres in Oklahoma with at least 50 juniper trees per acre (Red Cedar Task Force, 2002:6). "Oklahoma has 17 million acres of prairie, scrubland, cross timbers forests and other forests. NRCS estimates there are eight million acres of these 17 million that are infested with at least 50 red cedars per acre. That is a 400 percent increase in infested acres in the past 50 years. NRCS also estimates that Eastern Red Cedar trees are now increasing in numbers at a rate of 765 acres a day or 300,000 acres each year" (Oklahoma Conservation Commission, 2006:3). "Cedars rob the land of water. OSU research shows that one acre of cedars can absorb 55,000 gallons of water per year. One cedar tree can take up as much

as 30 gallons per day. This takes water away from grass and other plants and can reduce groundwater amounts" (Oklahoma Conservation Commission, 2006: 3). In 2002, the Red Cedar Task Force of Oklahoma, reported NRCS estimates of US$157 million required to address the treatment and control of Eastern Red Cedar (Red Cedar Task Force, 2002:6).

The Oklahoma Forestry Service cites that Eastern Red Cedar is "spreading for a number of reasons, including the lack of fire on the landscape, the species' adaptability and changes in land use and management following European settlement" (Oklahoma Forestry Services 2014: 1). "Cedars are especially a fire hazard because their limbs grow close to the ground and their foliage has a high content of volatile oils. Grass fires can easily set cedars on fire, which can then act as a ladder to spread the fire to the crowns of other tree species" (Oklahoma Conservation Commission, 2006: 3)."Native Americans regularly started fires to burn off areas so that green plant growth would attract buffalo and other wildlife. Lightning also started wildfires. However, some contemporary scholarship and general policy position of the Forest Service particularly in Oklahoma is the control and management of fire with the emergence of economic development and new settlement. This allowed the cedars to get a start in the prairies. With Birds spreading the seed, soon cedars began to increase." (Oklahoma Conservation Commission, 2006:3)

Research Methodology

On March 11th, 2015, I traveled to Oklahoma to learn more about the livelihoods and practices for farmers and ranchers. The central focus of the field study was to perform participatory action research for the Rural Coalition and National Family Farm Coalition. The Rural Coalition and National Family Farm Coalition are both members of the La Via Campesina,

the international peasant movement for sustainable agriculture and the first group to coin the term “Food Sovereignty.” During the field study, I collected data through engagement with a Rural Coalition partner, The Oklahoma Black Historical Research Project, Inc. I employed participatory observation methods and semi-structured interviewing techniques using free-response questions to obtain key informant data from the Oklahoma Black Historical Research Project Inc.’s 9th Annual Economic Development Conference entitled “Economic Strategies to empower Native American & Socially Disadvantaged Farmers.” The focus of this conference highlighted the grassroots and community-level work of Oklahoma farmers on drought resilience strategies in Oklahoma. Second, I participated in stakeholder interactions with leadership from the local Natural Resource Conservation Service (NRCS) that would be knowledgeable enough to provide key informant data on Environmental Quality Incentives Program (EQIP) and Conservation Stewardship Program.

The data on the topic of NRCS programs gleaned from these interviews is being used to document a case study of how Socially Disadvantaged Farmers and Ranchers are navigating NRCS programs in a changing climate and the impact of invasive plants on drought resilient rangeland. Under the 1990 Farm Bill, Socially Disadvantaged Farmers and Ranchers are defined as members of a socially disadvantaged group, those identity in that group has subjected them to racial or ethnic prejudice with regard to their individual identity (Womach, 2005: 240). The focus of my interviewing was originally Drought Resilience through “Climate-Smart” Agriculture and role and impact of “Climate-Smart” Agriculture and Crop Insurance on Practical Farming. While engaged in research it became apparent that historical underserved farmers were less concerned

with some of the specifics of the crop insurance program and more about what have become to be a major problem with the establishment of an invasive juniper tree called Easter Red Cedar.

Minority and Socially Disadvantaged and Farmers and Ranchers who represent a key constituency for the Rural Coalition and National Family Farm Coalition, were selected as constituency for the client whom would be knowledgeable about issues concerning previously underserved and beginner farmers in the United States. The C9th Annual Economic Development Conference featured primarily ranchers from throughout the state of Oklahoma but primarily Southeastern Oklahoma, as well as, Mississippi and also included local USDA representatives from the Natural Resources Conservation Service, Farm Service Agency, Rural Development and Forest Service. The Oklahoma Black Historical Research Project, Inc., led by a prominent leader in the community of minority farmers is a member of the Rural Coalition. Interviews were also conducted with a prominent leader of the Mississippi Association of Cooperatives currently serving as President of the National Family Farm Coalition. The Mississippi Association of Southern Cooperatives is a state association representing the Federation of Southern Cooperatives, an organization striving to develop self-supporting communities with programs that increase income, promote land retention and other opportunities for African Americans and all family farms, broadly.

Environmental Narratives

Environmental narratives are simplified explanations of environmental cause and effect that emerge in contexts where environmental knowledge and social order are mutually

dependent" (Forsyth and Walker 2008: 17). For Forsyth and Walker (2008) the term "narrative" has been used to describe "succinct summaries of environmental cause and effect that are seen as factual within popular debates or policy networks, but which are essentially based on highly selective participation in problem definition and knowledge production" (Forsyth and Walker 2008: 17). As a result, environmental narratives have a way of frequently imposing "meanings that are acceptable to their creators or users, but which may contain unwelcome implications for other social actors and high levels of simplification of complex and uncertain physical processes" (Forsyth and Walker 2008: 17).

Forsyth and Walker point to four important characteristics of environmental narratives. Essentially, narratives serve to stabilize complex and uncertain processes of environmental change into relatively simple and transferable summaries that frequently do not reflect the physical complexity of environmental change or the range of social experiences of such processes. Nor are these stabilized summaries necessarily consistent with the results of current empirical research conducted by biophysical scientists (Forsyth and Walker 2008:18). Second, they reflect, and reinforce, different social orders by being based on particular valuations or experiences of environmental change; particular notions of experience; particular sets of ideas about which social groups should carry the burden of blame and responsibility (Forsyth and Walker 2008:18). Consequently, narratives serve "an important political function by giving apparent scientific legitimacy to environmental policies that are actually based on forms of knowledge that are more uncertain and contests than commonly thought" (Forsyth and Walker 2008: 18). Simultaneously, environmental narratives "help to produce stabilized social categories by allocating particular roles (or subjectivity) to social actors in simplified stories of

environmental change. In other words, environmental knowledge and social order are coproduced" (Forsyth and Walker 2008: 18).

Soil Erosion

Piers Blaikie finds that problem formulation and problem framing play a major role in the "strategic choice of soil conservation policy" which means a choice which is "both feasible within an existing political economic context and is in step with a future direction of social change which is ideologically acceptable to policy-makers themselves" (Blaikie 1985: 149). Blaikie postulated that three propositions can be learned about the relationship between land degradation and society. The first proposition is that soil erosion and conservation arise from fundamental structures in society. The second proposition is that "it is not possible to offer critique of the process of social change from the point of view of soil erosion and conservation alone." The third proposition is that all approaches to soil erosion and conservation are ideological - they are underpinned by a definite set of assumption, both normative and empirical, about social change. (Blaikie 1985: 149). Therefore, Blaikie (1985) concluded that soil erosion in "lesser developed" countries will not be substantially reduced unless it seriously threatens the accumulation possibilities of the dominant classes. The degree of threat, it is argued has to be very substantial because the direct impact of accelerated soil erosion is difficult to measure, diffuse in its effects, and is often a gradual process and patchy from place to place (Blaikie 1985: 149).

Blaikie reintroduced these concepts in *Land Degradation and* Society (1987) stating a point that it very relevant to the history of land management in Oklahoma "Scientists have made

great strides in understanding and explaining the process of accelerated land degradation, although their work is far from complete. However, there is a need to find ways to bring together natural and social scientists more effectively to address the central question of why "land managers", as we will call them (e.g. peasants, pastoralists, commercial farmers, state forest departments and so on) are so often unwilling or unable to prevent such accelerated degradation" (Blaikie 1987:1).

For Blaikie, the land managers job is to manage natural processes by limiting their degrading consequences, both onsite and downstream, in many cases, selecting methods that were compatible with current political and economic structures. For Blaikie (1987), the basic problem for land management "is to cope with the fact that purposive plant growth and removal for use tends to extract mineral and organic elements from the soil faster than they can be produced. Natural replacement requires a rest period or the planting of crops and trees which often have a low value in use" (Blaikie 1987:8). In the case of Eastern Red Cedar, deployment was an expedient political and economic solution for land managers that provided a coping mechanism for ecologically unsound, farming practices and agricultural production to stabilize markets that had exhausted the natural capital of soils. Blaikie points out that "the production of the capability of the land itself is usually the secondary objective of farming systems, but is a vital objective and one that can absorb a great deal of labour" (Blaikie 1987:8). "Most processes both damage and reproduction are natural but that their operation is really influenced by human interference and artifice, the problem can be summarized by an equation in which degradation becomes a net function, both of human and natural forces, both of damage and repair" (Blaikie 1987:12).

An important point that came through during the process of interview research was the consistent emergence of the idea of farmers and ranchers that the NRCS had all farmers plant Eastern Red Cedar but perhaps were not aware of the unintended consequences of the introduction of that tree. For Blaikie (1987), the perceptions of land managers about the nature of a problem can play a significant role in "degradation crisis" of the last century. For Blaikie, ignorance and perception among land managers is a problem because subtle changes in the quality of the soil are both likely and widespread but the degrading processes often shows little immediate effect and does not reveal itself until a threshold of resilience is past, or until some untoward event exposes an increase in sensitivity. Discussing settlement in the Great Plains and Prairie landscapes, Blaikie points out that "newly settled settled farmers and graziers, who have used the natural "capital" of long periods of "rest"; on land never before polished or grazed since the present soil-vegetation complexes were formed, had little means of knowing that the land they worked was of high sensitivity and low resilience until disaster - usually a drought- exposed the consequences of a period of heavy use (Blaikie, 1987: 36).

Based on literature review and interviews with farmers and ranchers, the emergence of drought and a broader era of Climate Change is revealing the threshold of resilience that has been past for farmers. "Given the apparent success of remedies and adaptations a false sense of security could quickly become re-established. However, "ignorance" shades from real to willful, and may arise in part from other causes, such as a strong market imperative, a need to occupy new land for cash cropping or an ethos that man can and even must mastery nature (Blaikie 1987: 37). Periodically, land managers may experience a series of good years that produce

"optimistic ignorance" of the real consequences of observable changes, a theme that emerged repeatedly from interviews in Oklahoma.

Fire Ecology

Vayda's critical analysis of fire ecology points out a gap in fire research and fire management practices. First, "not all ignitions lead to forest wildfires in the sense of uncontrolled burning in forest areas (Vayda 2009: 52). Second, " the objective of preventing or limiting forest damage or destruction from wildfires is concerned out focus needs to be on forest fires and not ignitions per se as our primary objects of explanation and control. "In order to make ignition studies more relevant to explaining and controlling forest fires, we need: a) reconstructing the ignition events that have led to particular forest wildfires ; and b) analyses of findings from such studies in order to ascertain whether forest wildfires are more likely to result from ignitions either for some particular purposes or by some particular types of actors. Finally, Vayda points out that "if possible ignition sources are seen to be many and/or difficult to monitor and control, causal explanation and control of wildfires in tropical most forests may require priority attention not to ignitions but to changes in fuel loads, decreases in moisture, and similar factors affecting forest flammability" (Vayda 2006: 53).

Invasion Biology

The problem of invasive species or invasion biology has become an emerging issue analysis ripped for political ecological and anthropological analysis because the idea of invasive species as invaders is filled with social and cultural assumption. Davis argues "models that depict

invasions as a series of distinct steps and processes may distort the invasion process, in which case such models may be hampering our scientific understanding of invasions" (Davis 2009: 15) Davis proposes an alternative approach is to think of the process as an ongoing series of cyclical iterations (Davis 2009:15). Hulme et al. (2008) provides a framework that aligns with the case study of the establishment pathway of Eastern Red Cedar, where a species is "intentionally: introduced as a commodity for release, as opposed to unintentionally, such other examples would be bio-control agents, game animals, and plants for erosion control which then, lends itself to permit requirements and national regulations with the responsibility falling on the applicant, in the case of Eastern Red Cedar, the farmer or ranches (Davis 2009: 27)

Fairhead and Leach point out the way in which narratives are often used to justify development interventions and expanding the role of the outsider in the control of rural resources (Fairhead and Leach 1995:1032). Moreover, western science has "conceptualized natural and social phenomena as being of a different order; as a priori separate. It is assumed that "natural phenomena" can be investigated as separate from human society, except in as much as people and their social world are subject to nature and act on it" (Fairhead and Leach 1996:5) For Fairhead and Leach, social relations have been extirpated from the empirical science of the landscape which is of particular importance for the socio-ecological analysis of farmer livelihoods as well as emerging environmental conditions. They astutely remind scholars of the notion "That a landscape could become subject to such conflicting readings invites - even demands - consideration of the worlds which have generated them" (Fairhead and Leach 1996: 3). Ultimately, "this problem stems at a fundamental level, from the framing of scientists and

inhabitants' explanations within very different root assumptions concerning the relationship between social and ecological processes" (Fairhead and Leach 1996:5).

Rural Farmer and Rancher Drought Narrative

The Oklahoma Black Historical Research Project Inc. has a rich history as an organization that started in 1995, establishing a 501c3 organization to address the history of the Black Maroon which were maintaining history of the Black Seminole. The first initiative of OBHRPI started as a sister to the "Border Black Historical Research Project". A major focus of the OBHRPI began as rural economic development projects that would jump start rural America. As a result, over the years, that has remained as part of the goals and objectives as farmers working with rural communities. The OBHRPI has been successful in recent years in receiving funding for various projects that to sought to jumpstart rural economic development through basic information sharing that many farmers and ranchers were not getting otherwise. The organization in many ways is arranged like a community group functioning as a liaison between historically underserved and socially disadvantaged farmers and ranchers which is "set up to inform them (farmers) of all the benefits and opportunities that they can get through all the USDA programs and other opportunities and resources available for more communities." Outreach encompasses a range of practices for socially disadvantaged groups through venues like churches, community and cultural organizations.

OBHRPI has increasingly become involved in looking at the impact of how drought has taken effect on the state of Oklahoma in recent years. Two years prior to (the) drought in 2011, OBHRPI began to try to advise and take preventive action to support many of the farmers and

ranchers in their network by examining the impact of drought on their ability to "purchase hay to feed their cattle because the fields were drying up and there was a hay shortage." One prominent leader shared, "I also have looked at other things that I thought would have an impact, and if you're a farmer, you know that your the top two costs expensive costs is feed and fuel." Therefore, farmers were advised for example to instead of 10 bails of hay buy 20 to keep up with the feeding requirements.

"The year before that it was really bad, they were having hay shipped in from everywhere through the state. We were able work with FarmAid and get some guys from Wisconsin to ship some hay down, help subsidize the hay shortage with some of the farmers. We also worked with the teamsters who helped bring it down. Farm Aid gave us some initial resources to bring in some hay to this area and they have good coverage and everything but we still weren't there."

"So as we proceeded on in 2011, they were talking about there was not water, but let me back up. Then, the next, year became the water issue, where all the ponds were drying up, things were going bad, people were having to sell off their herds, and from my perspective and having to deal with the one on one basis and being on the technical assistance person to some of these new and beginning farmers that are getting into the business once you sit down with them and gain their confidence and you get them started. You gotta' keep in mind these guys work another job and then come home in the evening and do work and take care of their cattle and whatever else. They live in Oklahoma City and come down twice a week and they come down on the weekend and take care of their farm operations."

Farm and Rancher Eastern Red Cedar Narrative

Eastern Red Cedar in recent decades has emerged as a serious problem for many ranchers in Oklahoma that have their rangelands overwhelmed by what they consider an "invasion" of Red Cedar (Oklahoma Forestry Service 2015:1). During an interview with a member of the Oklahoma Black Historical Research Project Inc., when asked about the emergence of Eastern Red Cedar, responded that "Eastern Red Cedar, we now know is an extremely aggressive invasive plant or trees. It absorbs so much of the groundwater, so much of the moisture, it starves out other vegetation. In terms of fires, it is a very flammable tree." This key informant began to reveal a history of Eastern Red Cedar that is not readily apparent in primary literature and where its significance is raised, it is often mitigated or minimized by other intervening variables. The key informant continued to share that "Originally, it (Eastern Red Cedar) was used as a windbreak, but at that time we were not aware of how invasive it was. We certainly solved one problem but we created another."

For a prominent leader in the farmer and ranchers coalition, "the tree was a native tree, we had the dust Bowl and they used this tree to do windbreaks to preserve the soil that was getting blown away, but I don't think they gave much thought to the invasiveness of the tree because this tree has really taken over." "Farmers are losing farm land to eastern red cedar and cannot expand their herd. A tree that gains 700 acres a day in this state and consumes more that 300,000 acres a year, cost $250,000 or more to the wildfire issue that we have here." I think that right now NRCS has the removal of eastern red cedar and removal of invasive species as their top conservation priority because as one leader put it, "we had some wildfires here, where eastern red cedar played a very significant role and at one time, all 77 counties were on wildfire

alert, the eastern red cedar was the largest majority of cost for the state." OBHRPI began talks with NRCS about removing some of these trees, however, "at that particular time the cost share for that was not quite where it needed to be". If you look at it from the conservation standpoint, you have a tree that consumes 15-20 gallons of water per one individual tree. And then you have a cluster of these trees, so from a conservation standpoint and safety standpoint it would be good to eradicate these trees. Eastern Red Cedar presents an on-going problem for small farmers because now this tree has to be removed mechanically. The local because we listen to the guy from forestry but if they cut this tree, we still have the stumps down there. You know we don't have the new tractors, we got the old ones that need a little service more often than others, you know we run them down these, we're already having enough problems with our equipment, you know that's just a disaster waiting to happen.

When asked about the overall quality of service and experience in working with NRCS and the farmers, a prominent leader shared that "You know I honestly can say, back in the day, a lot of things they did were questionable, as we move down the road with this (quality improvement), the lawsuits and everything that has transpired, I honestly have to say that they are doing a better job than they did in the past." Farmers and ranchers have been through the "lawsuits and been paid but still the basic needs of the socially disadvantaged farmer is one that they take for granted." "Most of your other farmers that are in business, they have already gone through that process of maybe getting their ponds (water resource) in and getting there water and getting there grass management practices, but those farmers that were denied those processes are never going to be at the level that they were at those practices done. "So, it's not a priority for them, but it is a priority for these other guys, That's part of the ranking system."

"But now, back to Eastern Red Cedar, see as long as its a thing that effects everybody then it's a priority, but if it (Eastern Red Cedar & Wildfires) wasn't to the magnitude of what it is right now, the small farmer would be stuck. But since it's everybody, it's different." They've (Farmers and Ranchers) needed to have eastern red cedar removed from their places for a long time, But it was not a priority (for the NRCS or Forest Service) at that time. "Ponds and all the other things have priority, grasses and all that, but this guy couldn't grow no grass, because he had Eastern Red Cedar there. So it still was not a priority. and still we started having the all wildfires and all that kind of stuff and eastern red cedar was a big role it, then it became a priority to the status quo."

As a solution, Farmers and Ranchers are turning to other methods for managing the Eastern Red Cedar problem. "We are trying to put together a project where we can take those trees and do value-added, to do a pilot project." "Upon doing that we would be making either wood pellets, small red cedar chest, fencing and various things that can actually come out of that." "In doing this, we are trying to involve some of the tribes, because eastern red cedar is a cultural tree and we have to be very cautious about how we deal with this from a cultural aspect."

NRCS Forest Service Narrative

Discourse analysis of literature and publications from Oklahoma Forestry Services, as well as, presentations from Oklahoma Forestry representatives revealed common themes about the way in which state-level land managers understand the problem of Eastern Red Cedar. Prior to settlement, natural ignition events such as lightning caused fires, human-induced ignition

events “set intentionally by Native Americas sweeping across forests and plains were also common” (Oklahoma Forestry Services 2014:1). Currently, the narratives that the USDA Forest Service has put forth suggest that the establishment of red cedar forests is a product of passive land management, over-grazing and suppressions of wildfires that has transformed the landscape into an ideal nursery for redder seedlings (Oklahoma Forestry Services 2014: 1). “Red Cedars are easy to control when small, through burning, cutting, mowing or other relatively inexpensive land management practices. However, on lands that are not actively, used or managed, such as those held for investment or purely recreational purposes, it is not surprising to see Eastern Red Cedar taking over (Oklahoma Forestry Services 2014:1)” A conservationist from the Forest Service problematized Eastern Red Cedar dispersal through a broader historical lens that “the emergence of fire suppression activities led to the further establishment of the Eastern Red Cedar tree” as humans became better at managing fire, it became more of a problem. This narrative seems to reflect the power of environmental narratives and the diversity of understandings about what the nature of the problem and the root causes for the need for fire suppression activities remain unmasked.

Yet, conflicting accounts report that Eastern red cedar is very susceptible to fire, especially when small (Oklahoma Forestry Services 2014:1). The establishment of red cedar has really been a product of an overall reduction and change in fire suppression systems. The Oklahoma Forestry department has found that “red cedar encroachment into woodlands and riparian forest areas is a legitimate concern. These periodic forest restricted the spread of eastern red cedar , confining them to canyons, limestone outcrops or other places where fire intensity was low” (Oklahoma Forestry Services 2014:1). This species can out-compete and eventually

displace oaks, cottonwoods and other tree species. As they proliferate in woodlands, they shade out seedlings and saplings of plant species and grasses that are more desirable for local growers and ranchers.

Conclusion

Historical deployment of species such as the Eastern Red Cedar raises the issue of the politics of desirability that are a key component of the invasive species management or invasion biology discourse and connects with the contemporary debates on conservation biology and prioritizing species. Ultimately, that which is non-invasive is what we find as desirable, so ultimately, this is a psychosocial construct of ecological desirability and suitability for human need. The idea of a species such as Eastern Red Cedar becoming invasive is a process of how human beings and specific, land managers, as well as, farmers and ranchers coproduce narratives about the impact of perceived outside species of flora and fauna on local systems.

For the Oklahoma Forest Service, Eastern Red Cedar proliferating is perpetuated by a large shift in "land use and ownership objectives from active management to a passive management style, especially around population centers" particularly due to the concern over wildfires (Oklahoma Forestry Services 2014: 1). Further research reveals that, "increasing development in urban and wild land-urban interface areas (where the city meets the country), brought demands for improved by protection further limiting fires' spread. Therefore, in many respects, the human drivers of economic development brought about a cultural analysis of risk and then, a subsequent need for certain forms of development. Critically thinking through Vayda's analysis of the contradictions around forest fires and fire ignition events raises important

questions about the overall development narratives being employed to justify particular land management practices while exploiting those in other areas given that forest fire dynamics are highly reflected of ongoing social-ecological processes such as deployment of highly flammable trees for human conservation purposes limited by funding and finance, as opposed to what Vayda considers "predisposing factors." Passive and active management of land can be linked to a variety of social, economic and political choices many revolving around accumulation of capital and decisions to convert land over for to new forms of development, leave land fallow to increase natural capital for a new growing season or retiring land and receiving compensation from the federal government for conservation benefits, each of these conditions measured by market conditions.

One of the major prospects for future research is the examination of the divergent discourses that have embodied this paper and the way in which key actors in conservation planning, farmers, ranchers and land managers come engage these issues with very different understandings of history. For the Forest Service, the principal problem is the lack of fire on the landscape, the and the changes over time of fire ecology and utilization of fire suppression techniques on the land. The irony of this logic is that natural fire ecology was an integral part of the management of Eastern Red Cedar and thus, the government's own fire suppression tactics and best practices for land management strategies have now undermined natural systems.

For farmers and ranchers the problems that lie ahead are centralized on navigating systems of power. Natural resource management and conservation for agriculture in Oklahoma embodies a history of mistrust of NRCS practices, unintended consequences and the hierarchical system of power in which organizations like NRCS can advise and direct farmers using an idea

of privileged knowledge that takes the form of best management practices and actually situates farmers as passive land managers, a notion deeply offensive to farmers that work 12-16 hours/ day. The history of trusting and being directed to plant these (Eastern Red Cedar) exacerbates the emerging phenomenon of increasing drought and climate change. A major win-win for farmers in projects like the OBHRPI would be to grow support from NRCS to fund other organizations like OBHRPI to grant funds to do work that through the farmers perception, “NRCS simply cannot do”. This research serves to highlight the agency of community based organizations which embody diverse group of minority and socially disadvantaged farmers and ranchers who are living through extraordinary economic and environmental hardships.

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