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My Interactive Map: Mt. Fuji Ownership and Access

This paper references a google map document containing photos, overlays, and descriptions of sample sites. Please open this map and use it to reinforce your understanding of the sites while you read this paper. Google earth can be downloaded at this URL

<http://www.google.com/earth/download/ge/agree.html>.

Open google earth, click on the “add” tab, scroll down to Network link. In the network link window add this URL:<http://lcmaps.info/kml/gkohlerfuji2015.kml> into the field labelled “link.”

On the “layers” section of the left-hand sidebar un-check “primary database.” Double-click on any of the pins on the left-hand sidebar to zoom in and see the landscape. Explore the various overlays for each site by clicking the box beside the overlays for that site. A slider box will appear in the upper left-hand corner of the window. Click and drag the grey arrows to the right and see the overlays enter and exit by decade.

Introduction

To policy makers and scientists alike, from non-governmental organizations, to national governments, to the representatives of small timber-producing communities, the role of forest management in global environmental change is cause for concern (Aber 2001)(Dale 2001)(Hansen 2001). The effects of poor management on forest land are not limited to soil erosion, landslides, loss of biodiversity, habitat fragmentation, and limited access to resources used for fuel, fodder, and fertilizer (Hansen 2001). Clearcutting in subtropical regions has re-framed the governance of forestland from the forestry and forest sciences sector into a broader discourse of conservation, biology and ecology. In the last thirty years, ecological management and the broad interpretation of sustainability has entered the realm of forest management and global discourse, in the form of the 2014 UN climate summit (Arts 2013)(McKean 2000). Governance of forest range from privatization and top-down regulation to a common-pool arrangement where local institutions create rules-in-use (Dietz 2001). Attempts to improve resource use through privatization and market incentives have led to drastic changes in how land is managed within the last forty years. Market-based strategies improve resource management, like taxes, subsidies, and labelling are effective in some scenarios. However, the rapid move to privatization leaves many questions unanswered about how privatization will affect resource use on the ground (Cashore 2002.) Despite efforts of international and non-governmental organizations to create markets for sustainably-produced timber, forest degradation continues. My research is framed by a broad consideration of: **What types of institutions or rules-in-use exist surrounding**

common-pool resources, and how might privatization alter these common-pool arrangements?

The privatization of land and goods is a global trend. Since the 1980's, and the conservative British government of Margaret Thatcher, more than 100 nations rely on privatization and top-down regulation as a legitimate strategy for resource management. The goals of the conservative British government of the eighties are almost identical to the goals of every privatized nation since. "These goals, as described in Price Waterhouse, are to (1) raise revenue for the state, (2) promote economic efficiency, (3) reduce government interference in the economy, (4) promote wider share ownership, (5) provide the opportunity to introduce competition, and (6) subject SOEs to market discipline (Megginson 2001)." The sale of public land in parcels or market shares changes the way that a piece of land is managed. Privatization can fragment a piece of land into plots that are harder to profit from. As ownership moves from public to private the traditional institutions that regulate common-pool use surrounding this land are lost.

Across scientific and social discourse there is debate about how to manage so-called "common pool resources." The term common-pool resources has a long history of conflicting and confusing usage. Throughout my paper I will use common-pool resources to refer to areas where private land ownership cannot be easily enforced, resembling public land, but resources are subtractable, or rival in consumption, resembling private land. In Japan, access to common-pool resources requires a locally negotiated use-right, known as an *iriai* right. In Hardin's seminal work "The Tragedy of the Commons," he argues that in situations where benefits are private and costs are shared, resources are vulnerable to depletion (Hardin 1968)(Arts 2013). Hardin's theory is widely referenced in policy formation that advocates for privatization and state regulation. Though Hardin's theory is widely recognized

it is not without criticism. Institutional economist Elinor (Lin) Ostrom disagrees with Hardin's assumption that individuals are "hopelessly trapped in social dilemmas from which they cannot extract themselves without inducement or sanctions applied from the outside (Ostrom 1998)." Ostrom argues that the current behavioral theory of collective action does not take into account an individual's interest in preserving their reputation, especially where institutions facilitate face-to-face communication. This argument is strengthened in the context of Japan where social norms are conservative.

The American system of land ownership owes its simplicity, in part, to the fact that the majority of the public land ownership in the US continues to ignore the centuries of Native American common ownership in these same areas. The western-style transferable, enforceable, alienable property rights that most economic analyses presume typically give ownership to an individual (North 1994)(Ostrom 1998). When Japan began trading with the west, following the Meiji Restoration of 1868, the Japanese system of common ownership was translated to a system that recognized private land, owned by an individual, and public land, owned by the state. The system of ownership in common was lost in translation and continues to be mistaken for an open-access system. Common-pool arrangements do not fit neatly into the western system of public and private land. In the western system the role that proximity and access play in forest use is often ignored completely. In common-pool arrangements, enforcement is difficult due to high monitoring costs, similar to public land, but resources are subtractable, or rival in consumption, similar to private land (McKean 2000). The overlap between the on the ground use patterns of common land, private land, and public land highlight the problems with these categories. As a way of circumventing the confusion of how common-pool arrangements fit into a western system I will work more broadly to define tenure around Mt. Fuji. Forest tenure is described by the United Nations

Food and Agriculture Organization as, “a broad concept that includes ownership, tenancy and other arrangements for the use of forests (FAO 2014).” This term encompasses the spectrum within the current system of forest ownership and management in Japan and abroad that ranges from open access to strictly regulated private land. Within tenure arrangements, institutions play an important role in sharing information and creating rules-of-use. Structures of governance, in particular, are highly influential, and deeply embedded in tenure arrangement.

In an attempt to characterize the tenure arrangement of the forests that I visited at the base of Mt. Fuji during the summer of 2014 I focus my research around these questions:

Who owns the property rights to the forests that I visited around Mt. Fuji and who has access to them? What differences exist between property rights and use rights and how do these differences influence land management?

Underlying changes in governance or institutional rules-in-use are important questions of who owns a piece of land, who claims to own this piece of land, and who has access to this piece of land (White 2002). These decisions are complex, especially considering the lack of reliable data and the changing use-patterns within the forests.

Background

Situated on the southern side of the island of Japan, Mt. Fuji is a national, religious, and world cultural symbol. The mountain embodies the strong, unwavering Japanese character, and as one of 779 UNESCO world cultural sites, the mountain draws millions of tourists each year. According to the Japanese commissioner of cultural affairs, Seiichi Kondo, the intensive geo-engineering required to make the mountain liveable is a testament to human adaptation and a form of art itself.

Around the base of Mt. Fuji, my area of study, and in Japan as a whole, forest products have served an important ecological and economic role for hundreds of years. To this day, timber production prevents soil erosion and provides profits through domestic and foreign markets. Various methods of forest management and timber production have come in and out of use in the course of Japan's rich forest history. Some traditional methods are still used simultaneously with larger industrial scale timber production, while others are no longer employed. Japan has undergone nation-wide reforestation campaigns, driven both by the market price of timber, and the nationalistic spirit they were promoted with (Totman 1989). Historical patterns of tenure and the forces that shaped them inform policy-makers about the ownership, disputes, and access privileges that are associated with a piece of land. With UNESCO enlistment and new policy protecting certain parts of the mountain, there is much at stake. Only through consideration of ownership and access in the Mt. Fuji area can policy makers maintain the institutions, or rules-of-use, that exist in forests where access is granted to local communities, but resources are limited.

Methods

I sampled eleven different forests, on public and private land, that are representative of the forest tenure that exists around Mt. Fuji. I was able to gather information about the documented and undocumented use at each of my sample sites. Using prefectural land records and the help of local ecologist Watanabe Michihito, I was able to find out the documented ownership at each of my sample sites. Michihito, who has spent his entire life studying the Fuji area, shared his understanding of current and historical land-use at each of my sample sites. I could not have completed my research without his help. Some of the sites are consistent with their documentation and de jure property rights, but others are not so neatly defined. According to the Japanese Ministry of the Environment, 58% of the total

forested land is private land, 31% is National government land, and 12% is owned by prefectural governments. Within my sample sites common-land use adds an interesting difference between Japanese and American land-use policy. According to Margaret Mckean, professor emeritus at Duke University, and scholar of political economy, in regards to forestry,

“It is becoming increasingly clear that local communities both filter and ignore the central government’s rules. They also add their own rules, generating local institutions--rules-in-use--and patterns of activity that can diverge widely from legislators and bureaucrats expectations. Because local communities live with forests, are primary users of forest products, and create rules that significantly affect forest condition, their inclusion in forest-management schemes is now considered essential by researchers and policy makers (Arnold 1992)(Mckean 2000).”

My methodology was primarily concerned with accessibility and the possibility of expansion. Mapping forest tenure allowed me to layer historical, geographical, topographical, and ecological data in a platform that is easy to navigate and possible to follow through time. My map displays the sample sites, examples of historical use at each site, photos and descriptions of current land-use, and the ownership and access associated with each site.

Results

One of the layers that can be switched on shows the land use-boundary of the Onshirin Kumiai (Management Area of the Onshirin Kumiai). The Onshirin Kumiai is an organization that represents the interests of the original 12 villages around Mt. Fuji. The

common land-use rights of these 12 original villages are still recognized today and are referred to as “iriai rights.” The Onshirin Kumiai gives a political voice to these iriai rights and serves as an example of how land tenure arrangements are based on the history of land-use at a particular site. Through organization into a larger group the Onshirin Kumiai has secured a stronger claim to the traditional use-rights than each individual village that it represents. For over one million dollars annually, the Onshirin Kumiai rents the Nishigahara grasslands to the Japanese Self-Defense forces (Bernstein 2013). This land is strategically valuable because of its flat topography and rural setting. Claims about the Onshirin’s right to access Nishigahara were legitimized by relying on records of villages to perform customs on the land. Eventually, the record of *irai* use on this land was legitimate enough for it to be transferred to the Japanese government for an annual rent payment.

The patterns of historical use, like coppicing for firewood and harvesting grasses for animal feed, still occur on much of the land surrounding the recorded boundary of Onshirin land. On one patch of Yamanashi Prefecture land, near the Aokigahara lava flow, relics of village based charcoal production echo the Meiji-era (1868-1912) change, from village-based clan system of the Tokugawa Shogunate, to the centralized imperial government that is represented by Yamanashi Prefecture today (Pin_5). Though the Onshirin Kumiai may only represent certain village interests, other traditional village claims are still recognized. At one research site, on the takamarubi lava flow, the town of Yamanaka-ko village has planted rows of konara, a type of Japanese oak used for charcoal production and firewood (Pin_1). Though the land is technically owned by the prefecture, village based use occurs and is recognized on this land. Without proof of the small land-use patterns on this piece of land, the Japanese government would not have recognized the importance of keeping customs on this land, and the Onshirin Kumiai could not claim rights to the land (Bernstein 2013).

Common land rights, or Iriai rights, are exercised on both public and private land. On another piece of land owned by the Sengen Shrine, a privately owned religious group that owns the top of Mt. Fuji, small-scale coppicing of firewood by Oshino and Yamanaka village is allowed (Pin_4).

Large-scale, plantation-style production occurs on both public and private land in the Mt. Fuji area. Some of the sample sites were used for timber production after WWII or earlier in the century (Batdorff 2014)(Knight 2000). In Aokigahara forest, I found evidence of cypress harvest around WWII. Stumps with particular markings, rudimentary technology for log removal, and the uneven age distribution of the standing timber reveal that the harvest was of a larger, more organized scale than traditional selective cutting. Irai right holders, probably the Onshirin Kumiai, harvested this land technically owned by Yamanashi prefecture (Pin_6).

Private forestland on the southern side of Mt. Fuji has been fragmented into small parcels of land, some are due to land sale, and some are due to land being divided up in estates of deceased owners (Sadamoto 2014). The size of these parcels make it difficult to generate profit from the timber market alone. Some owners make it work with careful land management strategies. One such owner, Watanabe Sadamoto, has created a method of forest management that he thinks will bring profitability back to the Japanese timber industry. He has invested hundreds of thousands of dollars into his land and the land of those who hire him to demonstrate the viability of his method. Rows are cut into the existing stand of timber to provide ease of harvesting in the future, understory is allowed to develop to promote healthy biodiversity, and trees that are less desirable in the timber market are thinned to provide room for more profitable trees (Pin_9)(Pin_10)(Sadamoto 2014). Before implementing his method the biodiversity in the plantation forests is low, and the even rows

of monocultured timber see little sunlight due to the density of the canopy (Ministry of the Environment 2014)(Sadamoto 2014)(Pin_8). Many owners cannot afford to harvest or manage their stands. These forests lay economically dormant until the market price of timber increases or management costs on this land decrease.

Broader Implications

During the 20th century Japan underwent a dramatic land-use transition to broadleaf coniferous forest on both public and private land (Batdorff 2014)(Knight 2000). At a low point in 2002 only 18% of the wood used in Japan was domestic while almost half of the country is heavily forested. According to the the ministry of the environment these low timber prices have begun to recover. Of the publicly owned sites that I visited, more than half of them recognize *iriai* use-rights. As the market value of timber recovers, the profits gained by privatizing public land increase. Enforcement and management costs on large pieces of national and prefectural land are too high to bring timber to market. Common-land arrangements, as they exist today, could be at stake if the sale of public land continues . Enforcement costs are lower for private owners due to smaller parcel size. If common-land use is subtracting from already thin profit margins, and the western model of “transferable, enforceable, alienable property rights” is upheld, then communities surrounding newly privatized forests could lose access to forests that have sustained their families for centuries..

The Onshirin Kumiai serves as a good example of how land tenure arrangements are based on the history of land-use at a particular site. Through organization into a larger group, the Onshirin Kumiai has secured a stronger claim to the traditional use-rights than each individual village that it represents. Records of how the Japanese government had allowed the villages to perform customs on the land legitimized their claim to use-rights. Without proof

of the small land-use patterns on this piece of land, the Japanese government would not have recognized the importance of keeping customs on this land, and the Onshirin Kumiai could not claim rights to the Nishigahara grasslands (Bernstein 2013).

The newly forming community-based forestry movement in the Pacific Northwest provides a framework for comparison between Japanese forest tenure, and tenure in the United States (Christoffersen 2008). Both Japanese and American approaches are faced with defining local-level use patterns on publicly owned land. Japanese *iriai* rights are exercised on public land, but there is little data about how much and where these use-patterns are exercised. A recorded history of land-use is necessary for substantiating a claim for access. In the Pacific Northwest, forest collaboratives seek similar representation in government that the Onshirin Kumiai has secured at the base of Mt. Fuji. Collaboratives work with both public and private interest to “create forests that are ecologically sustainable, economically viable, and appreciated by all stakeholders (Croley 1997.)” By considering the stakeholders and institutions surrounding a site forest collaboratives decrease the amount of time and money that is spent in lawsuit or dispute.

Public land is being sold at a rapid rate in Japan and worldwide. As the forests of Japan are re-commoditized through private investment local communities could lose access to these forests. Organizations like the Onshirin Kumiai in Japan, and the FFAC in the Pacific Northwest represent legitimate claims for forest access. These claims have been substantiated through time and require evidence showing consistent patterns of use, as with the Onshirin Kumiai’s claim for access to Nishigahara. Changes in forest management directly affect local communities. Organizations like the FFAC and the Onshirin Kumiai are important for representing local stakeholders when public land-use is being considered. In

collaborative approaches to land-use decisions, communities maintain important rules-of-use for common-pool resources (Ostrom 1998).

Public land-use decisions can reach a broader group using geospatial/ geo-visual decision support systems (C-GDSS) to help make data accessible in map format. Accessibility was a primary concern of my methodology. The use of digital mapping in studying tenure allowed me to merge scientific and historical data in a way that is easy to share and expand upon. This approach to data presentation increases the participation of community members by focussing policy decisions on specific sites that community members can speak confidently about. Without a specific site to focus on policy debate becomes too abstract and does not accurately reflect the landscape or communities involved (Bailey 2009).

Decentralized management of ecological resources with an emphasis on site specific information will result in governance strategies that complement or strengthen existing rules-of-use. Consideration of these existing institutions, or rules-of-use, strengthen pre-defined norms instead of creating new regulation that could lead to unforeseen consequences (Berkes 2000).

As we move into the Anthropocene we will undoubtedly encounter unforeseen consequences to our current development patterns (Nordhaus 2011). We must build resilience into our current management structures in order to work within an environment where unforeseen consequences are unavoidable. Improving dialogue between the scientific community, policymakers, and stakeholders on the land will help to spread information and reduce the impact of unforeseen consequences. More work needs to be done to investigate the effects of privatization on common-pool arrangements in order to better understand what is at stake when public land is privatized.

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