2017

Eco-Restoration, Private Landowners, and Overcoming the Status Quo Bias

Anastasia Telesetsky
University of Idaho College of Law, atelesetsky@uidaho.edu

Eco-restoration, Private Landowners and Overcoming the Status Quo Bias

Synopsis: As many States evaluate how to fulfill their international duty to ecologically restore territorial landscapes and seascapes, restoration by private actors on private lands becomes increasingly important for achieving landscape level restoration ("eco-restoration"). This article identifies a typology of private actors presently involved in eco-restoration including philanthropists, indigenous people, non-governmental organizations, multi-stakeholder collaborations, and corporations and suggests some motivations for why these individuals and groups engage in restoration activities. The article notes that an " inactive majority" of private landowners in some States such as the United States is not involved in restoration efforts. While there are a number of reasons why private landowner may not be involved in ecologically restoring their own lands, one important theory for non-involvement is the existence of the status quo-bias. The paper concludes with a proposal of two policy nudges that States might undertake to encourage private landowners to make investments in eco-restoration. First the government should invest in community programs designed to create pro-environmental social attitudes and second the government can facilitate legal conditions to pilot "special purpose restoration districts" to further large-landscape restoration efforts

Human pressures on ecosystems have been intensifying due to a variety of drivers including population growth, overconsumption, and poverty. Sometimes the pressures are recognized early and a government or concerned citizens take active measures to protect a place by designating it as a reserve, park, or protected area. Where governments and citizens have failed to be proactive, there is "legacy degradation" from industrial, agricultural, or other development activities. As human population pressures increase, ecologists recognize that designating protected areas may not be sufficient to protect ecological systems. [1] In the last few decades, governments, communities, and citizens have recognized the need to actively restore natural places deemed to have significant ecological value or cultural value. Effectively, conserving biodiversity and restoring certain landscape level values such as hydrological processes depend on restoration efforts being linked across landscapes.[2]

While States have a legal duty to undertake restoration efforts within their territories as part of an obligation to protect natural resources for the nation,[3] it is less clear how this state-based duty to engage in restoration might extend to other actors operating within a landscape. Any given ecologically degraded landscape may host a variety of landholders including individual households, communities, companies, or the State. Some of these landholders will have more secure land tenure than other landholders. The security of tenure that a given landholder has over a piece of land informs the amount of investment that a landholder will make in any landscape level restoration project.

Systematic investment in ecological restoration on lands where there is recognized private tenure is, however, essential if eco-restoration is to be achieved at the landscape or seascape level that ecologists suggest is necessary for returning key ecological functions

[1] Chauvenet and Barnes (2016)
[2] Lamb, Erskine, and Parrotta (2005), 1631
[3] Telesetsky, Cliquet and Akhtarkhavari (2017): Chapters 4-8 (Noting that this duty is reflected in legal obligations adopted by States in international environmental legal treaties.)

that have been damaged by human impacts.[4] Depending on the extent of private landownership within a State, most landscape level restoration will require some active engagement by private landowners who own key ecological resources as well as ongoing coordination between public and private landowners. As one set of researchers focused on private partnerships for restoration noted, the possibility of a "new mechanism for conservation" beyond traditional protected area strategies presents "new risks and challenges."[5] A recurring challenge for a State with large private landholdings is motivating private actors to invest in the types of restoration activities that would have meaningful ecological results. As this paper will argue, States must devise strategies capable of overcoming the known "status quo bias" that makes it difficult to create the conditions for change. Because private actors generally do not have specific legal obligations to engage in ecological restoration projects on private property,[6] States will need to incentivize restoration efforts by private landholders including corporate actors, communities and individuals particularly in locations where private or communal landholdings exceed public landholdings.

This paper assumes that both national and municipal governments in countries with large number of private landholdings such as the United States, European Union, Canada, Australia, and New Zealand would not readily mandate private landholders to participate in large-landscape restoration projects due to potential political backlash (e.g. uncompensated regulatory takings). While governments at various levels might encourage private participation in voluntary stewardship programs that have ecological restoration objectives, mandated restoration interventions on private lands are unlikely to be politically feasible as a basis for engaging more private landowners.[7] Existing participation in government facilitated incentive programs (e.g. U.S. Department of Agriculture Conservation Reserve Program or Farmable Wetlands Program) often depend on ongoing financial transfers where individual landholders receive some financial benefit from the government for undertaking certain activities such as restoring riparian buffers. While these programs may lead to desirable results, these programs can be quite expensive without leading to long-term behavioral changes in land use. In some respects, these programs strengthen attitudes around status quo.

This paper suggests that government-facilitated policy nudges designed to create pro-environmental attitudes may become increasingly important for building a normative framework where "ordinary" private landholders choose to invest time and resources in long-term eco-restoration projects on their own lands. This paper analyzes the "status quo bias" as one policy barrier that will need to overcome. While policy nudges can be facilitated by either government decisionmakers or by community groups, this paper will focus only on government nudges that might be introduced at a local, state, or federal level, depending on which governmental entity is seeking to promote restoration.

---

[4] Global Partnership on Forest and Landscape Restoration, 'Our Approach: The Landscape Approach' http://www.forestlandscaperestoration.org/tool/our-approach-landscape-approach

[5] Adams (2016), p. 1.

[6] Private actors under some national laws may be required to undertake certain restoration activities on private lands, if, for example, they create a nuisance that damages neighboring private land.

[7] Chaves et al. (2015) (Some scholars call for policies that mandate landholders to initiate restoration on private lands.)

Acknowledging that there are a number of "restoration heros" doing uncompensated large-scale restoration work across the globe, this paper's contribution to the literature is to consider how government policies might be designed or amended to overcome existing status quo bias among individual private landowners who are not currently engaged in any restoration efforts on their own lands. This paper starts with an examination of a number of private actors and the diversity of motivations (including egoistic, social, and biospheric motivations) that they have for engaging in landscape level restoration. The review is presented in order to derive a typology of private actors in order to understand what is currently driving individuals or group to undertake restoration on private lands. As indicated below, there is no single narrative to explain why groups as diverse as tribes and billionaries choose to restore. The second section of the paper focuses on the status quo as a psychological and behavioral barrier to increasing engagement in private restoration efforts. The final section proposes two government facilitated nudges to enhance more private actor participation in restoration. The two nudges proposed to shift the existing status quo are 1) government investments in programs to enhance pro-environmental social attitudes through commitments and consultations and 2) the creation of legal conditions to pilot "special purpose restoration districts" to enhance large-landscape restoration efforts.

I. *Typology of Private Actors Engaging in Eco-restoration Activities*

Ecological restoration is increasingly a matter of urgent policy as States contemplate how to protect human security in the face of geophysical shifts including climate change. As States take stock of national conditions, there is an emerging understanding of the linkage between ecosystem function and human well-being that is reflected in ongoing government policy efforts to promote ecosystem services and secure natural capital.

While some States may assert governmental powers and require existing private landowners to undertake needed active restoration such as large-scale removal of invasive species or re-planting of native species for the benefit of the State's environment, such an exercise of government regulatory authority in countries with constitutional property rights would trigger questions of government expropriation of private property interests. Any such program would be both difficult to implement where there are "hold-outs" and would be expensive if there are large numbers of affected landowners. Even when the government takes actions on its own lands, private landowners have vociferously protested species restoration projects. For example, in some of the Western regions of the United States and in Scotland, private landowners, particularly livestock farmers, have had strong negative reactions to the proposed reintroduction of predator species such as wolves onto State lands.[8]

What this means is that meaningful landscape restoration depends on private involvement. "Active restoration" efforts by a variety of private actors are essential for achieving the goals of landscape level restoration projects particularly in areas where private interests own much of the landscape.[9] In the past few decades, a diverse group of private actors have been investing in eco-restoration activities. The motivations for

[8] Erlend Nilsen, et al. (2007).

[9] In the United States, approximately 60% of the land is privately owned. Cynthia Nickerson et al. (2011), p. 2.

engaging in the pro-environmental behavior of ecological restoration can be generally classified as egoistic, social, or biospheric.[10] Egoistic motivations are about self-enhancement. Social motivations encouraging restoration activities are based on members of a group seeking to conform to shared social standards and norms that improve human welfare. Biospheric motivations for restoration depend on an individual or group valuation of nature as having intrinsic worth independent of human needs. The remainder of this section provides a brief typology of a diverse group of private actors who are engaged in "active restoration" on private lands and their motivations. This typology is based on classifying actors based on what appears from printed materials describing restoration efforts to be motivating the restoration work supported either by an individual or a group. It is a simplistic typology because there may be interaction among the various groups. For example, a wealthy landowner with a personal restoration commitment may also be engaged in shaping an NGO mission to support ecological restoration. This typology is presented to challenge the preconception that private entities are disengaged with large-scale restoration. As a population, private entities especially those with intrinsic motivation to undertake restoration activities are often quite engaged. The typology, however, will demonstrate that large numbers of private landowners do not fit within the typology of "restoration actors" but are instead disengaged from restoration processes for a variety of reasons including the existence of the "status quo bias".

Group One: Big "personas"- Committed individuals

There are a number of influential individuals who engage in active restoration projects typically on their own property or are financially very generous in supporting restoration efforts. These philanthropic individuals have been categorized as "eco-barons".[11] While it is not possible to ascribe any single motivation to this diverse group, these individuals appear to be catalyzed by personal passion to achieve long-term restoration objectives. Each of these "big persona" individuals has or had the luxury to be able to experiment with a variety of restoration approaches because these individuals have secure land tenure and either sufficient financial or labor resources to invest in a restoration effort. To illustrate the types of individuals and groups that might occupy this "active restoration" space, it is informative to consider the narratives of Aldo Leopold, M.C. Davis, Ted Turner, and Wenliang Wang. While each of these big "personas" have adopted different specific ecological restoration objectives, all of these individuals are or were committed to actively restoring long-term ecological health.

Aldo Leopold has been revered among restoration practitioners because of his lifelong commitment to understanding what kind of physical environmental legacy a small group of like-minded individuals might be able to leave. In Baraboo, Wisconsin, Professor Leopold bought a degraded farm along the Wisconsin River in 1935 for $8 an acre. With the tireless assistance of his family and friends, he replanted the land with 40,000 conifers and hardwoods and re-established native prairie to test a variety of ideas about ecological restoration.[12] For Leopold, the process of experimentally applying ecological theory to his Baraboo property offered a project of great personal interest as well as creating an opportunity to spend quality time with his family.

---

[10] Schultz and Kaiser (2012), p. 561.
[11] Edward Hume (2009).
[12] Aldo Leopold Foundation Staff, Interview, (June 2014).

M.C. Davis and Ted Turner are both individuals with large landholdings in the United States and financial resources to support large-scale restoration projects. Based in Freeport, Mississippi, multi-millionaire M.C. Davis is using his revenue from trading in oil and timber to restore the "Piney Woods", a longleaf pine forest ecosystem that has 97% disappeared from the American Southeast.[13] With 86% of the land in Alabama, Florida, Louisiana, Mississippi, and Texas in the hands of private owners, most restoration activities depend on the generosity of private landowners.[14] Inspired by a community presentation where he heard about the disappearance of bears in the Southeast, Davis' large-scale restoration project is motivated in part by a personal desire to see black bears return to the Southeast. He has been investing about $1 million a year in replanting 51,000 acres that he purchased to provide restored habitat for Southeast black bears.

Ted Turner's story is different because restoration is not a personal interest but also a core component of his business enterprise. Using money earned from his media empire to purchase 2 million acres of land including 18 operating ranches, Turner is the second largest private landowner in the United States. His ranches are intended to be economically self-sustaining but also to operate in an "ecologically sensitive manner while promoting the conservation of native species."[15] In order to promote conservation of native species, Turner has invested in restoration efforts including reintroduction of species and restoration of key habitat through the Turner Endangered Species Fund and the Biodiversity Division of Turner Enterprises. Turner has been willing to experiment with restoration projects such as restoring a viable population of Aplomado Falcon to the Chihuahuan grasslands on one of his New Mexican ranches to support federal recovery efforts of the species under the Endangered Species Act.[16] While the species did not recover as hoped for, the five-year effort reflected a personal ecological commitment by Turner and his Endangered Species Fund team. A more successful project undertaken by Turner and his team included restoring 250 bighorn sheep that became the largest desert bighorn sheep population in New Mexico and the largest population on private land in the country.[17] Ongoing projects continue for black-footed ferrets, bolson tortoises, Chiricahua leopard frogs, Chupadera springsnails, cutthroat trout, gopher tortoises, Mexican wolves, northern and southern Rocky Mountains gray wolves, prairie dogs, red cockaded woodpeckers, western pearl shell mussels, and wild bison. Turner is now using his personal influence, social capital, and the experts that he employs to influence other big "personas" to make commitments to species conservation work that includes restoration efforts.

---

[13] Tony Hiss, (September 2014), 'Can the World Really Set Aside Half of the Planet for Wildlife?' *Smithsonian Magazine*, http://www.smithsonianmag.com/science-nature/can-world-really-set-aside-half-planet-wildlife-180952379/

[14] United States Department of Agriculture, (2014) 'Natural Resources Conservation Service, Gulf of Mexico Restoration: A Private Lands Vision for Success'. http://www.gulfofmexicoalliance.org/wp-content/uploads/2014/05/USDA-Gulf-Report.pdf

[15] Turner Ranches- Turner Enterprises, http://www.tedturner.com/turner-ranches/

[16] Turner Endangered Species Fund, 'Aplomado Falco', http://tesf.org/project/aplomado-falcon/

[17] Turner Endangered Species Fund, 'Desert Bighorn Sheep', http://tesf.org/project/desert-bighorn-sheep/

Because 60% of the United States is privately owned and 80% of U.S. endangered and threatened species exist on land that is either partially or solely private lands,[18] he is seeking action from other large landowners and contributes to an organization called the Western Landowners Alliance. As the Turner Endangered Species Fund website observes, "It is now incumbent on us to consider new collaborations that can increase the number of private landowners motivated by an approach to land management that includes a focus on imperiled species."[19] Ted Turner uses his social network to influence other similarly situated landowners. In July 2011, landowners representing 8 million acres of land that was either owned or leased in nine Western States and Alberta met to discuss landscape level conservation and restoration.[20] While the Founders' Group of the Western Landowners Alliance was primarily composed of landowners with large land holdings who were motivated to conserve land in order to maintain a particular Western "big land" lifestyle,[21] a movement was born that today encourages participation from landowners with all sorts of sized land holdings.

The final "big persona" differs from Leopold, Davis and Turner because he does not own the lands that he is trying to restore. Wenliang Wang, a successful businessman whose company manages Dandong port in China, is committed to supporting restoration as a cause. In funding initial projects, Wang supported restoration work at the Dandong port. In January 2016, Wang committed US$5 million to restore acreage of dying mangroves in the Rookery Bay National Estuarine Research Reserve in Florida. Wang appears to be a "patron" of the environment. He had never visited the site but agreed to financially support the restoration effort in part because the organization backing the restoration efforts already had a plan and permits to complete the restoration work.[22] Also notably, Wang is investing in what some ecologists deem a novel technique of "ecological mangrove restoration" that changes the hydrology of the area.[23]

What unifies the approach of these private actors is that these individuals exercise a great deal of autonomy in their decision-making over what types of restoration work to undertake. Without a direct inquiry, it is not clear whether these individuals are driven by egoistic, social, biospheric, or some combination of these motivations. What is clear is that these individuals are intrinsically motivated to undertake ambitious projects on their land or with their money. These "restoration heros", many of whom have been innovators in business and society, are not trapped by the status quo bias, but rather embrace the possibility for change.

Group Two: Indigenous Groups

---

[18] Turner Endangered Species Fund, 'Western Landowners Alliance', http://tesf.org/project/western-landowners-alliance-wla/

[19] Turner Endangered Species Fund, 'Western Landowners Alliance', http://tesf.org/project/western-landowners-alliance-wla/

[20] Western Landowners Alliance, 'About', https://www.westernlandownersalliance.org/about/; Western Landowners Alliance, 'Working Lands Health', https://www.westernlandownersalliance.org/programs/water (Typical landscape restoration efforts by members have focused on riparian restoration and wetland restoration)

[21] Western Landowners Alliance, 'About', https://www.westernlandownersalliance.org/about/

[22] Staats (2016)

[23] Staats (2016)

Across the globe, there are a number of indigenous communities who are investing in landscape restoration efforts on lands that they own or have a specific cultural interest in preserving. Part of the motivation for undertaking restoration activities in spite of no obligation by a State government is an assertion of indigenous sovereignty over traditional lands. In addition, restoration activities might be considered an investment in the social future of a community both by bringing a community together that may have been fragmented by forces of modernity and by reviving culturally significant resources that tie the community together as a people (e.g. grasses for weaving or herbs for medicine).

There are numerous examples of indigenous ecological restoration work but two stories highlight the underlying motivations behind large-scale restoration project led by indigenous communities. First, in Australia where 31% of the land is under Aboriginal control or use rights,[24] ecological restoration undertaken by the aboriginal communities is understood as being essential for Aboriginal survival because without the land, indigenous people lose an essential part of their identity.[25] In 1995, the Makmak clan received title back to their land from the government. The land that they reacquired rights to had become severely degraded through the introduction of the mimosa plant leading to disruptions in floodplain management and fire suppression. Over the following years, the clan through an extensive program of fire, herbicides, ground control, and biological control ecologically restored the flood plain so that cultural traditions could be resumed including access to subsistence foods. Aboriginal commentators emphasized that, "The restoration happening in these threatened areas has the potential to offer guidelines for new forms of restoration that seek to protect the integrity of the relationships between people and place, and to protect sacred places."[26] This example suggests that at the community level, there exists an intrinsic motivation to restore indigenous lands in order to revive the essence of what it means to be indigenous to a particular place.

The connection between people and place is equally critical for other indigenous peoples even where they do not have recognized land tenure. In the United States, the native Hawaiian people are volunteering their time and investing resources to restore Kaho'olawe Island in the Hawaiian archipelago. Over the course of its history, the island was used for a penal colony, sheep and cattle ranches, and exploding munitions. Only in 2003 was the land conveyed by the U.S. government to the State of Hawaii. The land has not yet been returned to the Native Hawaiians but there is an expectation that the land will be managed by a Native Hawaiian entity in the future "to preserve and practice all rights traditionally exercised for cultural, spiritual, and subsistence purposes."[27] In the meantime, groups of Native Hawaiians because of the significance of the island have volunteered thousands of hours on watershed restoration and revegetation. Ecological restoration is a celebration of native Hawaiian culture so that the process of restoration is as significant as

---

[24] Richardson and Lefroy (2016), p. 670.

[25] United Nations Declaration on the Rights of Indigenous People, UNGA 61/295 (2008): Article 25 ("Indigenous peoples have the right to maintain and strengthen their distinctive spiritual relationship with their traditionally owned or otherwise occupied and used lands, territories, waters and coastal seas and other resources and to uphold their responsibilities to future generations in this regard.")

[26] Daiyi and Ford (June 2002).

[27] Kaho'olawe Island Reserve Commission , 'Core Programs' http://kahoolawe.hawaii.gov/coreprograms.shtml#restoration

the outcome. As the reserve commission has commented "The healing of Kanaloa (Kahoʻolawe) is a physical and spiritual renewal that is deeply rooted in the revival of cultural practices, traditions, and rituals. As a result, activities conducted by the Kahoʻolawe Island Reserve Commission Restoration Program are guided by the need to achieve a more holistic understanding between man and nature and to place strong emphasis on healing as well as environmental restoration."[28]

Like the "big personas" of restoration, the indigenous groups rely on having autonomy in decision-making. The ability to exercise this autonomy may be complicated by the status of land tenure. Seeking to restore a connection with their land and their ancestors, indigenous groups are likely to be driven to undertake restoration projects by a combination of social and biospheric motivations. Most of these groups are intrinsically motivated even if they may end up relying on external support to cover costs for their restoration work. In part because of deep spiritual and cultural connections to land, indigenous peoples are less prone to being trapped by a "status quo bias". The "status quo" for many of these peoples is the product of a colonial history that has diluted their connection to the ecologically healthy landscapes of their oral histories.

Group Three: Corporate Entities

In addition to the landscape level projects undertaken by individuals and indigenous groups, there is increasing corporate-led and corporate-funded restoration. Landscape rehabilitation may be legally required for certain corporate sectors such as surface mining industry[29] or landscape restoration may be mandated in the case of damage caused by a corporation that violates a statute or common law. In addition to legally mandated rehabilitation or restoration efforts, corporations may undertake additional projects for a variety of reasons including to reflect corporate values and raise morale for employees, to promote corporate social responsibility, to enhance marketing by improving corporate image, or to protect its social charter to operate. In some instances, landscape level restoration may also make business sense if the restoration can contribute to ecosystem services that the company depends upon.[30]

CEMEX, a Mexican cement company's work in the borderlands between the United States and Mexico and its ongoing restoration efforts reflect a combination of corporate social responsibility, acknowledgment of its social charter to operate, and marketing. CEMEX has a created a department or office called "CEMEX Nature" intended to promote "a culture of appreciation and respect for nature, not only among our own stakeholders, but also within the global community."[31] At the 13th Conference of Parties to Convention on Biological Diversity in 2016, CEMEX leadership pledged to seek concrete actions to solve biodiversity challenges as part of the Cancun Business and Biodiversity

---

[28] Kahoʻolawe Island Reserve Commission , 'Core Programs' http://kahoolawe.hawaii.gov/coreprograms.shtml#restoration

[29] *See e.g.* Surface Mining Control and Reclamation Act, 30 U.S.C. 1201-1328 (Requiring mine operators that cause adverse effects on fish, wildlife, and environmental values to achieve enhancement of these resources where possible)

[30] For example, restoration of watersheds can make sense for a water purveying company who relies upon the natural filtering capacity of the land.

[31] Cemex Nature, 'About', http://www.cemexnature.com

Pledge.[32] CEMEX operates a number of quarry rehabilitation projects plus larger landscape level restoration projects including the 15 year old effort in the El Carmen Reserve, a private 140,000 hectare transboundary conservation area between the United States and Mexico owned by CEMEX and focused on protecting a biological corridor and restoring threatened species such as the desert bighorn sheep.[33]

While ecological restoration is not a core competence of most businesses, there are a few smaller businesses that exist to fund restoration work. For example, the owners of the Kaboega Farm, a property of 6550 hectares in South Africa, ceased all agriculture activity twenty years ago on their property. Recognizing that they lived in a unique location that included biologically unique temperate rainforest fragments, the former farm owners are pursuing a business plan based on restoring the four different ecosystems present on their land by attracting visitors to see their restoration work-in-progress.[34]

Depending on the size of a company and the values of its leadership, decisions to invest in restoration on private lands seem to reflect a combination of intrinsic and extrinsic motivations based primarily on egoistic and social drivers. For some corporate entities, restoration of corporate lands is part of a "good neighbor" corporate responsibility policy. In pursuing external recognition for their restoration efforts, some corporate entities are seeking third-party certification of their restoration projects suggesting that social motivators may underlie some corporate restoration activities. [35] While many large corporations are hampered by a status quo bias that focuses on shareholders financial interests to the exclusion of anything else, companies that have engaged in restoration work may overcome aspects of this bias through the building of a company culture around shared values that excite employees to be part of a "progressive" company.

Group Four: *Non-governmental Organizations*

Non-governmental organizations particularly land trusts make large contributions to restoration on private lands. These organizations are motivated to engage in restoration to meet stewardship obligations expected by members and donors. Like the "big personas", many of the land trusts have flexibility and autonomy in their restoration planning because they own the land. These trusts do not have boards of directors or large donors who may influence priorities for restoration.

In many cases, these groups will specifically acquire lands that will further landscape level restoration goals. For example, after an initial acquisition of 525 acres from The Nature Conservancy, the Mountain Restoration Trust in the Santa Monica Mountains of California acquired an additional 975 acres with the commitment of restoring and maintaining the lands as a reserve.[36] In other cases, non-governmental organizations will

---

[32] Cancun Business and Biodiversity Pledge (December 2016), https://www.cbd.int/business/pledges/pledge.pdf

[33] Cemex Nature, 'Meet El Carmen', (21 October 2015) http://www.cemexnature.com/el-carmen-p/el-carmen/

[34] Reid (2016).

[35] The non-profit Wildlife Habitat Council offers certification of habitat projects, species reintroduction projects, or education projects as well as project guidance to help potential clients understand what types of programs are likely to be successfully certified, http://www.wildlifehc.org

[36] Land Acquisition, 'Mountain Restoration Trust', http://www.mountainstrust.org/restoration/restoration.html

reach out to undertake restoration on private land that they do not own. For example, because three-fourths of the remaining wetlands in the United States are on private lands, Ducks Unlimited has participated in private land restoration projects through the provision of expert advice on wetland restoration.[37]

A third role that NGOs play in restoration on private lands involves coordination and facilitation of multi-stakeholder restoration networks involving a variety of actors. For example, Ducks Unlimited supports specific restoration interventions on private lands through agreements with private landowners. One mechanism that NGOs could deploy to further multistakeholder restoration is the negotiation of restoration contracts or restoration covenants that might "set out positive obligation under which values, such as ecological function or habitat extent, are to be improved."[38] These contracts or covenants would establish a formal relationship between restoration partners including defining roles and responsibilities of different parties.

While internally, NGOs may suffer from some of the inaction associated with the status quo bias, NGOs tend to be formed around a set of values expressed in a mission statement that motivate NGO employees and NGO funders. NGOs avoid falling into a trap of the status quo when they commit to being "agents of change" and creating a mission state of transformation.

Group Five: *Public-Private Restoration Efforts*

There are increasing numbers of landscape level restoration efforts led either by NGOs or government agencies attempting to design a common space for restoration activities that is not limited to individual land-holdings. These projects vary in their genesis and execution but tend to rely on some form of collaborative governance. The motivation for these projects is a combination of intrinsic and extrinsic motivation. For those first actors who are involved in creating the network, there tends to be intrinsic motivation based on concerns for environmental integrity. For later actors who join the collaborative effort, there may also be intrinsic motivation based on increased knowledge about the nature of the restoration effort or there may be extrinsic motivation based on external pressure, real or perceived, to participate in the network.

While there has not been empirical work done to determine whether these deliberate collaborative efforts are more effective in terms of delivering restoration outcomes than efforts only by private restoration actors, these multi-stakeholder efforts should, in theory, have long-term impact because they have the potential to gradually transform norms across a variety of communities who share a landscape in common. The Cape to City project on the North Island of New Zealand is illustrative of a "blended" project with stakeholders including the Hawke's Bay Regional Council, civil society groups, Maōri iwi, and individual land owners. The project is a response to ecologists' findings that 75% of native vegetation has been cleared in the area and only 2% of wetlands remain.[39] Focused on promoting native planting, habitat corridors, and pest eradication, the stakeholders have agreed to a long-term voluntary implementation of a biodiversity strategy that builds on

---

[37] Ducks Unlimited, 'Developing a Wetland Mitigation Project on your Land', http://www.ducks.org/conservation/du-wetland-mitigation/developing-a-wetland-mitigation-project-on-your-land

[38] Lindsay (2016), p. 699.

[39] Hawke's Bay Biodiversity Strategy, November 2015, p. 5, http://www.hbrc.govt.nz/assets/Document-Library/Strategies/biodivstratNovember2015v3.pdf

existing synergies.[40] The parties intend to "unite the past with the present to restore biodiversity in Hawke's Bay and set a precedent for the future in New Zealand."[41]

These collaborations can take a variety of approaches in terms of how various stakeholders leverage restoration efforts from other stakeholders. In most of these collaborations, leaders can be identified who drive both the facilitation process and the mechanisms to incentivize restoration. For example, in the United States, one of the mechanisms for furthering restoration has been government designed restoration partnerships where the Fish and Wildlife Service provides both financial and technical assistance to private landowners undertaking certain type of habitat restoration projects on private lands. In return, landowners agree to enter contracts to maintain the project for at least ten years and contribute some personal funding to the project.[42]

In contrast to the Fish and Wildlife Service partnerships that are a government-led initiative, the Yellowstone to Yukon Conservation Initiative (Y2Y) is a civil society led project. This large landscape conservation and restoration initiative that spans across a national boundary has partner commitments from conservation groups, local landowners, businesses, government agencies, Native Americans, First Nations, and scientists. In the context of this restoration and conservation initiative, civil society groups have been playing a core advocacy role in keeping pressure on the government to undertake specific actions that promote restoration. For example, in September 2016, the Y2Y project leaders and members of the Canadian Parks and Wilderness Society met with Alberta government leaders to implement a wildlands forest restoration project to restore degraded landscape and boost a "restoration economy."[43] These two models, the Partners for Fish and Wildlife

---

[40] Id. at 7 (Observing that "While a lot of great work is currently underway to help restore Hawke's Bay's biodiversity, even more could be achieved if our efforts were better coordinated. We need to align and harmonise our biodiversity programmes so these can be more efficient and effective.")

[41] Cape to City, 'Species Reintroduction', http://capetocity.co.nz/our-work/species-reintroduction/

[42] United States Fish and Wildlife Service, (2003) Partners for Fish and Wildlife Program, 'Policy 64 FW1' https://www.fws.gov/policy/640fw1.pdf (Defining habitat restoration broadly to include "(1) Practices conducted with the goal of returning a site, to the extent practicable, to the ecological condition that likely existed prior to loss or degradation. Examples include removal of tile drains or plugging drainage ditches in former or degraded wetlands; returning meanders and sustainable profiles to straightened streams; burning grass communities heavily invaded by exotic species to reestablish native grass/plant communities; and planting native plant communities that likely existed previously on the site. (2) Practices conducted when the restoration of a site to its original ecological condition is not practicable, but will repair one or more of the original habitat functions and involve the use of native vegetation. Examples include installation of a water control structure in a swale on lands isolated from overbank flooding by a major levee in order to simulate natural hydrological processes and placement of streambank or instream habitat diversity structures in streams that cannot be restored to original conditions or profile. (3) Removal of the disturbing/degrading element to enable the native habitat to reestablish or become fully functional.")

[43] Yellowstone to Yukon Conservation Initiative, 'New Report Highlights Opportunity for Restoration in the Castle', (7 September 2016), https://y2y.net/news/media-releases/new-report-highlights-opportunity-for-restoration-in-the-castle

and the Y2Y initiative, illustrate that "multistakeholder governance" is shaped by the vision of those parties that are leading a given effort.

While there is great promise for projects that are based on collaboration among a variety of actors that inhabit and regulate the landscape, there are also many challenges in building the needed relationships between stakeholders to support restoration work. Some of these challenges involve under-representation by some stakeholders, competition among different collaborations, and risk-aversion to make difficult decisions in light of a desire to maintain consensus among the community. [44] Because the reality is that many collaborations will fall apart over time particularly when there is a lack of intermediate results,[45] multistakeholder initiatives need to address how to maintain working momentum within restoration collaboration over the long periods of time that might be necessary to measure ecological success on a restoration project.[46] Avoiding the inertia associated with a status quo bias may pose particular challenges for public-private collaborations. Depending on the nature of a given restoration partnership and the power relations between partners, it may prove difficult to initiate projects when there is a possible "push-pull" dynamic that may exist for a number of reasons including risk averseness. For example, a public and private actor may commit to a large landscape project but the public actor wants to proceed cautiously for political reasons while a private actor is keen to take steps that

Missing Actors?

The five groups of actors listed above are making noticeable contributions to landscape restoration efforts. The examples of privately initiated and funded restoration above are, however, still the exception rather than the norm even though the "restoration" economy is by some estimates growing in terms of direct employment and revenues. [47].

Restoring private lands has not yet achieved the status of a social norm. If landscape level restoration is to be effective, the types of projects undertaken by the actors described above will need to be replicated more broadly beyond the existing ecological leadership of the Leopold family, CEMEX, or The Nature Conservancy. Given that the globe consists of approximately 36.8 billion acres of inhabitable land and that a large amount of this land is under private control,[48] it is critical to understand why more private

---

[44] Margerum (2016), pp. 27-53.

[45] Margerum (2016), p. 44.

[46] Recognizing the need to maintain momentum for the long-run is an important part of the early organizational stages of a restoration alliance. In the case of the Hawke's Bay Biodiversity Strategy, the partners agreed to a long term commitment. As the strategy document provides "The unifying goal flowing from the overarching vision is to ensure that important biodiversity habitats andpopulations of native species are enhanced, healthy and functioning by 2050…2050 might be a long way off but we are realistic about the challenge. It has taken more than 200 years to create the biodiversity problems we have today, so it's going to take a while to make progress towards fixing them." Hawke's Bay Biodiversity Strategy, November 2015, p. 7, http://www.hbrc.govt.nz/assets/Document-Library/Strategies/biodivstratNovember2015v3.pdf

[47] BenDor et al. (2014) Exploring and Understanding the Restoration Economy . Available at: https://curs.unc.edu/files/2014/01/RestorationEconomy.pdf (Covering 126,000 jobs ranging from forestry, fisheries, construction, real estate, and technical consulting services worth $9.5 billion of revenue)

[48] Cahill (2011) (Noting that the Catholic Church owns 177 million acres, while the largest non-monarchial and non-institutional owner of land is Australian cattle magnate Sir Sidney Kidman who recently had control of 24 million acres)

landowners with resources are not adopting landscape restoration as part of their land asset management. Without the intrinsic motivation of an NGO mission, a corporate social responsibility project, or a spiritual quest to reconnect with the ancestral world, what, if anything, might a government be able to do to help private landowners help the States in its efforts to restore national landscapes. This paper proposes that government decisionmakers need to consider what might be driving a lack of engagement among the so-called "residual" landowners who do not have obvious intrinsic or extrinsic motivation to act and what coordination steps might be taken to catalyze private landscape level restoration efforts. The following section examines the potential barrier of the "status quo bias" to activating a social norm to restore.

II. *Status Quo Bias*

A lack of ongoing commitment to ecological restoration by the majority of private landowners signifies a collective action problem. With the exception of the work of a handful of individual and groups like those described above, there are relatively few private actors who are engaged in active restoration on their privately owned lands. Many landowners "free-ride" on the benefits generated by a few committed pro-restoration landowners. In spite of the increasing urgency to undertake restoration efforts,[49] why are many private landowners reluctant to become more engaged? Accepting that there may be many reasons that private landowners do not undertake active restoration including financial incapacity,[50] this section will discuss one core reason for individual inaction: the status quo bias.

Economists William Samuelson and Richard Zeckhauser observed that when faced with decisions and particularly complex decisions, decisionmakers will often opt to do nothing or follow a former decision. This "status quo bias" results in a decision "to follow customary company policy, to elect an incumbent to still another term in office, to purchase the same product brands, or to stay in the same job."[51] Status quo bias explains the reason that Coca-Cola drinkers demanded the return of "classic Coke" even though in blind taste tests consumers preferred the new Coke.[52] In theory, a landowner who recognizes the importance of restoration work, can afford to do restoration work and knows where to obtain information about how to do restoration should express a rational preference towards restoration. Yet, the absence of private ecological restoration efforts across tracts of private lands suggests that something else is driving decisionmaking.

Samuelson and Zeckhauser observed that "the status quo bias is not a mistake—like a calculation error or an error in maximizing—that once pointed out is easily recognized and corrected."[53] Status quo bias is also referred to in the literature as "decision avoidance" and is understood as related to the "omission bias" whereby individuals prefer

---

[49] Hobbs and Norton (1996) (Noting that "widespread losses of production and conservation values" is making "large-scale ecosystem restoration increasingly urgent.")

[50] Other reasons for inaction might include a perceived lack of behavioral control, sunk costs inhibiting behavioral momentum, and perceived risks of taking action.

[51] Samuelson and Zeckhauser (1988), p. 8.

[52] Samuelson and Zeckhauser (1988), p. 11.

[53] Samuelson and Zeckhauser (1988), p. 9.

options that do not require any action.[54] It is rather "subtle" and when recognized "there appear to be no obvious ways to avoid it beyond calling on the decision maker to weigh all options evenhandedly."[55] The status quo bias operates in part as a psychological crutch for individuals with numerous demands on their time and money. When looking at a landscape that has a certain set of healthy plants and animals present, even if they are invasive, a land owner may take the approach that "if it isn't broken, don't fix it." For ecologists seeking to conserve certain rapidly disappearing environmental values through restoration, it is frustrating that what is "broken" is in the eye of the landowner.

Why a landowner who is informed about the value of ecological restoration may opt to do nothing can be explained by four primary reasons: 1) doing nothing is a rational decision due to transition costs ; 2) individuals weigh losses more than they weigh gains in their decision-making; 3) individuals are psychologically committed to a decision that has already been made; and 4) legal systems are likely to grandfather in existing uses and not require changes.

First, transition costs need not be financial costs. Restoration activities can elicit emotion from a landowner who has become used to a given status quo. Actively removing something from the landscape may be perceived as disruptive just as remodeling of a home, even when designed to add amenities, can be upsetting for those living in the midst of the construction site. The presence of emotional costs can lead to status quo inertia as well as the costs associated with developing a restoration plan, which would require substantial inputs from a landowner regarding the parameters of a given project. Even positive change can be unsettling for individuals. For example, when new technology was introduced into certain fisheries in New Zealand to reduce bycatch, the fishermen deployed the nets but were alarmed by the reduction in catch even though it was saving them time in sorting between fish they wanted to keep and other fish.[56] The fishermens' expectations about weight and fullness of a net conformed to their status quo bias based on historical catches.

A landowner may also experience uncertainty. Even though they have been told of the advantages of restoring a native wetland on their property, they may harbor feeling of uncertainty that once they have invested in the wetland that it will not meet their expectations or that they will actively dislike a restored wetland on their property because it will increase their risk of exposure to disease. An ecologically valuable restoration project does not necessary appeal to human desires. As one entomologist reflecting on ecological restoration wrote, "Do we want increased populations of pathogen-transmitting mosquitoes when we build or restore wetlands and riparian habitats?"[57]

Second, the idea that a loss may be weighed more heavily than a gain is illustrated by the situation of current residents of San Francisco, California who disagree about what the future landscape of their city should look like. A number of city parks in San Francisco have eucalyptus trees that were imported in the 19th century for use by the railroad. The wood from the eucalyptus trees proved inadequate for railroad ties but the trees flourished in Northern California with notable impacts on native fauna. When the city of San Francisco proposed to remove 18,000 trees over the next 20 years and replant with native oaks, citizen groups found themselves at odds. California Native Plant Society championed

[54] Anderson (2003), p. 143.
[55] Samuleson and Zeckhauser, (1988), p. 9.
[56] Interview with Richard Wells, Deepwater Group, Nelson, New Zealand, (March 2016).
[57] Willott (2004), p. 147.

the decision as responsible restoration.[58] The Save Mount Sutro Forest Campaign rallied community members to protect the status quo and the existing stands of trees "as a thing of ethereal beauty."

Third, a landowner may want to justify the preservation off previous land uses to himself. Perhaps, a given piece of land was passed down through generations and an heir wants to maintain the land as they inherited it. Or perhaps, a landowner purchased a particular piece of land because they liked something about the land that turns out to be a recently introduced feature of the land such as invasive plantings. While they might be in a position to change that feature, they may also have a psychological commitment to the status quo that operates as a "sunk cost" because they want to confirm the value of their original decision to invest in a particular place. People defer to past decisions to guide future choices.[59] In order to avoid the cognitive dissonance associated with increased knowledge about the need to restore land and the benefit that might accrue from active restoration, a private landowner is likely to opt for the status quo.

Finally, legal systems encourage inertia by accepting whatever the existing status quo is for certain users even when a specific use might run counter to management outcomes. For example, even though the Everglades National Park in Florida became a park in 1934 and motorized vehicles were banned, uses by certain boaters were grandfathered in.[60] In 1989, the Federal government moved to phase out "airboats" to protect ecological values but still grandfathered in the use of the private boats as long as a boat driver could demonstrate they were 16 years old and an active "air boater" in 1989.[61] Even if a government could overcome political barriers and, in theory, require some level of ecological restoration efforts by new purchasers of private land in order to promote landscape level restoration, such laws would be unlikely to be retroactive and would end up discriminating against certain owners without delivering broader social benefits.[62] Environmental laws designed to create transitions often end up reinforcing existing behaviors due to political pressure to resist any proposed laws that will change the status quo.[63] Change is often perceived as a zero-sum game.

A fear of change may be one driver that has made it so difficult for so many individual homeowners to abandon ecologically inappropriate lawns in dryland places. Public debates have been ongoing in drought-prone places such as Arizona and California with some private landowners reluctant to invest in drought-resistant lawns. [64] For some, lawns have nostalgic value or conform to images of the "good life" as presented in various

---

[58] Garrett (2013)

[59] Samuelson and Zeckhauser (1988), p. 39.

[60] 16 U.S.C. **§** 410(c); An Act to Provide for the Establishment of the Everglades National Park in the State of Florida and for Other Purposes, 48 Stat. 816 (May 30, 1934)

[61] Public Law 101-229 Everglades National Park Protection and Expansion Act of 1989

[62] Nash and Revesz (2007) (Noting that existing coal-fired power plants were exempted from pollution-control requirements under the U.S. Clean Air Act in spite of being significant contributors to air pollution)

[63] Bruce Huber (2011) p. 94.

[64] Ed Fletcher (2015) (Noting a tension between those with lawns and those who are creating a new norm)

media outlets. In some places, the law itself may contribute to strengthening the status quo bias where, for example, homeowners' association rules or municipal ordinances require certain practices.[65] Without role models or leaders like Aldo Leopold or M.C. Davis who challenge the status quo, it becomes difficult for communities to commit to change. In the long-term changing social norms, such as restoring lawns to native vegetation, requires multiple strategies including changing attitudes and providing social reinforcement.

Even with some role-modeling, there often needs to be a certain "critical mass" before individuals are prepared to invest in change. Because many individuals are risk-averse in decision making, inertia is common. Understanding that individuals will display a bias towards following the status quo unless to do so would run counter to other social norms, active restoration will continue to be an exception rather than the preference on the private lands of actors that do not fit into the typology of actors described in the first section. It is far easier for a private landowner to justify doing nothing than to undertake an active and potentially complex restoration project. While it is hoped that this observation about the status quo is useful in understanding why so little landscape restoration work is taking place in many States with large number of private landowners, the last section of the paper offers two possibilities for overcoming the status quo bias. These suggestions are presented in a general manner and would need to be properly tailored to the political and cultural situations of a given State, province, or municipality.

III. *Overcoming Status Quo Bias Against Private Land Restoration using Government Nudges*

The proclivity towards relying on a status quo bias to do nothing becomes even more pronounced when a challenge is perceived as "high-difficulty" versus "low-difficulty." [66] What this might mean in relation to ecological restoration efforts on private land is that a given landowner might be persuaded by a friend, a favorite celebrity, or their own individual research that restoration on property is a meaningful activity to support. This would constitute a low-difficulty decision for the landowner because at this stage the actual investment in restoration work is still aspirational. When the individual contemplates how to actually restore a given parcel of land, then the decision making moves from a "low-difficulty" decision to a more complex set of decision-making principles. Operationalizing restoration generates an array of questions that would need to be answered by a given landowner, for example:

- How much private financial investment or investment of time will a given landowner be willing to make in support of restoration?
- What are the priorities for restoration on a given parcel?

---

[65] See e.g. Stonegate Homeowners' Association Landscaping Standards and Compliance Policy for a community near Dallas, Texas ("All members of the Association are required to maintain the landscaping on their lot in an acceptable fashion that is at a minimum, in keeping with the original intent of the neighborhood. Original landscape packages consisted of 2 trees and 20 three to five gallon evergreen foundation shrubs placed in the front yard within beds with mulch spread in all front yard bedding. Front façade corner plantings were of a larger mature size than those placed elsewhere in the foundation plantings and must be replaced as such.")

[66] Fleming et al. (2010), pp. 6005-6009. (Defining the status quo bias as "suboptimal acceptance of a default choice option.")

- Should the government be underwriting restoration on important parcels of private land if the restoration contributes to the public good of healthy landscapes?
- Will restoration efforts positively or negatively affect property values?[67]

At this point the landowner is faced with high-difficulty decisions where there is likely to be a large degree of uncertainty and few clear answers. Researchers testing human subjects in a laboratory noted that the more complicated a decision becomes the more likely the status quo bias will be triggered leading to suboptimal choice behavior.[68] The more decisions required by a landowner, the less likely the landowner may be to initiate a restoration effort. This phenomenon has been tested in the context of consumers who "become impassive in the face of overwhelming choice, leading to a fall in the number of purchases."[69] Given that a great deal of land is in private hands that might be appropriate for restoration either in support of a landscape approach to restoration or to provide a necessary ecological corridor between two ecosystems, what government nudges might be developed to effectively stimulate private investments in restoration?

In the context of private land restoration, there are a variety of drivers that might lead individuals to engage in extensive environmental restoration activities. Some individuals opt to restore their lands in order to restore a significant historical legacy or out of a powerful sense of nostalgia for the way a place was. For others, restoration is perceived as an urgent technical challenge that involves both the application of innovative science and design approaches to achieve effective restoration outcomes.[70] Others restore out of a spiritual sense of duty and stewardship--- a form of "connective justice."[71] Still for others restoration is part of a great sustainability mission to provide for social justice. [72]

The remainder of this article explores two policy options that might influence decision making among the "residual landowner" group about whether to overcome a status quo bias and engage in active restoration efforts on their own lands. The first government intervention addresses policy nudges that could change attitudes. The second government intervention addresses the facilitation of a community committed to achieving restoration objectives.

---

[67] For example, if a given landowner restores to native grasses in a neighborhood that is otherwise a neighborhood of putting green-style lawns, will that depress the economic value of the property for the given neighborhood?

[68] Fleming et. al. (2010), p. 6008. (Providing a scientific explanation as to why the status quo bias is neurologically triggered by difficult decision-making contexts).

[69] Fleming et. al. (2010), p. 6007.

[70] *See generally* Coral Restoration Foundation Innovative Growth and Outplanning http://www.coralrestoration.org/coral-tree-nursery/ (Introducing new creative approaches relying on natural coral processes that have generated thousands of corals for regenerating coral reef growth)

[71] Telesetsky, Cliquet, and Akhtarkhavari (2017) at 288-299.

[72] Liu (2011) (Describing the restoration of the Loess Plateau in China as a means of returning livelihood to farmers in the region by ensuring that productivity was not always prioritized over ecosystem function on farming lands)

a. Nudges to change attitudes- Creating structural conditions for a public commitment, reducing aspects of restoration complexity and potentially "rewarding" individuals for achieving restoration objectives

In some cases behaviors can be changed directly leading to changes in attitudes. [73] But for the government to take steps to change behavior of private landowners who do not have obligations to undertake active restoration is a proposition fraught with political challenges. A bottom up approach by government officials focused on changing attitudes regarding environmental behavior ("hearts and minds") may yield broader results. Psychologists have observed that through the evaluation of an individual's attitude towards an object (such as land) that an individual may undertake certain behavior to either bring them psychologically closer to the object or further from the object.[74]

One means of beginning to transform attitudes might be to create the structural conditions for individual landowners to make commitments to undertake certain concrete behaviors in relationship to their land such as planting pollinator friendly species. A number of studies suggest that "making a commitment to engage in a behavior increases the likelihood of doing it."[75] Individual commitments adopted in a public context may be effective in increasing pro-environmental behavior. This type of government program might boost motivation for individuals who will deliver on their public commitment because it conforms to their personal identity as a trustworthy and reliable commitment-maker.

Governments desiring to achieve restoration objectives whether at a homeowners, municipal, provincial, or national level might want to consider creating commitment opportunities within regions targeted for landscape restoration. Depending on the resources available to the government, the governing body could organize during a time of year when it is possible for individual landowners to take proactive restoration steps a series of weekend or evening workshops. Ideally, invitations would be delivered to individuals rather than through a bulk mailing approach with follow-ups to confirm participation. A personal approach is more likely to signal to future participants that the event is not simply a generic event but one that is designed to be tailored to the interest of the participants. Initial workshops introducing landowners to ecological restoration concepts could be offered for free. More advanced workshops might be offered for a nominal fee that would be waived or refunded if workshop participants agree to commit in writing to undertaking certain measurable restoration activities such as removing certain invasive species, ceasing to use certain chemicals, or replanting certain numbers of native species. Depending on the structure of the government programs, individual written commitments to do some action may enhance longer-term participation in a project over group commitments or provision of financial incentives to participate.[76]

What a landowner is willing to commit to in writing and whether a landowner receives feedback on how they are doing on achieving their commitment matters greatly in terms of achievement of a task. While some landowners with a certain type of ecological curiosity might enjoy the challenge of a "restoration puzzle", complexity of a task can become a barrier to action. When a task is perceived as difficult, this reinforces the status

[73] Sunstein (2013)
[74] Eagly and Chaiken (1993)
[75] Schultz and Kaiser (2012), p. 566.
[76] Burn and Oskamp (1986)

quo bias. Once an individual or community is overwhelmed with possible obstacles and with an array of possible outcomes, there is a propensity for sticking with familiar territory. Inertia in decision-making is a comfortable default particularly where there is a high degree of uncertainty regarding outcomes such as there is with many landscape restoration projects.[77]

While the government cannot artificially simplify the decision-making that is necessary for effective restoration work on private lands, they can offer specific types of support that might enhance pro-environmental attitudes to undertake active restoration. First, governments can assist with regulatory mechanisms. States can decide to streamline permitting processes for restoration projects that meet certain qualifications. This might mean that a restoration project may not be subject to the same environmental impact scrutiny as a project without desired restoration outcomes. Already, there are categorical exclusions in some legal systems for which no environmental assessment or environmental impact statement is required.[78] Where States decide to offer assistance with reducing regulatory burden, these programs should be widely publicized so that landowners understand that the government wants to support their private efforts.

As an additional step to simplify the complexity of embarking on a restoration project on private lands, States might provide private landowners with consultations about individual landholdings. These guidelines could serve as a "recipe" for restoration with a series of steps that can be verified so that individuals might be able to approach restoration work on their lands more like a "do-it-yourself" grounds project than a full-blown ecological experiment. This recommendation might help with the status quo bias because it would compartmentalize any landscape level restoration work into understandable units to be accomplished. To further strengthen the "commitment" part of such a program, State officials might agree to pay return visits to see how they can continue to help a landowner in achieving restoration objectives. Some of this step-by-step restoration work is already happening with the movement to return pollinators to the landscape by groups such as backyard beekeepers who recognize the ecological value of keeping hives and river restoration groups who have been planting native riparian species that support pollinators.[79] The value in investing in these types of consultation programs lies in enhancing the amount of individual control that a landowner can experience as a given restoration project proceeds and signaling government support for private efforts. Parties that perceive that they have little control over a situation are less likely to exhibit pro-environmental attitudes or behaviors.[80]

Providing some form of structured feedback after an individual or group has made a commitment to act could provide an additional catalyst for action for some individuals.

---

[77] As restoration ecologists have recognized, returning a certain set of plants and animals that historically inhabited a landscape does not necessarily qualify as effective restoration. Soil, hydrological, and biochemical conditions may be sufficiently altered that a restoration ecologist must be ready to adapt any given restoration strategy.

[78] 40 CFR 1508.4 (United States definition for a "categorical exclusion" from National Environmental Policy Act). Examples of categorical exclusion that do not require environmental impact assessment include the construction of bicycle lanes and landscaping.

[79] See e.g. Boercker (2010) (Observing that restored riparian habitat supports as diverse a population of bees as remnant riparian habitat)

[80] Blake (1999)

In a study on paper recycling, researchers discovered that participants that received weekly feedback regarding how much paper was being recycled were more likely to have enhanced recycling behavior.[81] Individual and aggregate feedback might be provided regarding planting of native species, sightings of species returning to restored habitats, or other measures related to ecological health.

Because the idea of achieving discrete targets appeals to some individuals, government agencies that are seeking to increase participation from private landowners may want to tap into "reward schemes" that have been used successfully by fitness centers for decades. Under these schemes, a participant receives some level of recognition based on metrics associated with performance e.g. miles run, classes attended, or calories burned. The idea behind these programs is to enhance individual performance by creating a friendly atmosphere of competition where everyone can be a "winner" if they achieve the pre-determined standards. Healthy "pro-environmental competition" might be generated through government mechanisms based on "scorecards" that measure individual landowners efforts and provide comparisons to a pre-defined peer group. Fundraisers have applied this technique for decades when they remind you that X% of your class has donated or that person X is a member of a "club" that has donated a certain amount of money to a cause. These mechanisms psychologically work because individuals strive to conform to a group and a group's expectations.

The electric utilities have deployed a number of interesting experiments to try to improve individual commitment to saving energy. For example, the Opower "Home Energy Report" provides individuals not just with their power usage but also with the average monthly usage for similarly sized properties. The energy usage message is further reinforced with emoticons that indicate whether the power usage is "good" or "bad".[82] Similar strategies might be applied among a group of private land owners living on proximity who own valuable habitat in need of restoration. Private landowners might be informed through statistical aggregation of how they are performing in comparison to other private landowners on restoration work. For example, landowners might be informed that neighbors within a certain radius has planted a certain number of native trees, removed a certain acreage of invasive species, or done certain improvements to a riparian region. This type of comparative program would follow best from the set of workshops described earlier after a set of individuals have achieved restoration objectives.

This type of intervention is more likely to counter the status quo default among a group of landowners who have some familiarity with each other by introducing both an element of indirect peer approval and offering specific realistic goals for private landowners. Striving to achieve a vague objective of "restoring land" may not operate effectively as a catalyst for a landowner who is ambivalent about restoration while a specific objective of planting a certain number of trees or removing a certain number of invasive species from a land unit may offer a stronger driver to action because the goal is specific, short-term, and presumably achievable.

The success of a strategy based on comparative behavior relies on some degree of pro-environmental attitudes among individuals being targeted for behavioral changes. For example, studies from the electricity industry suggest that some individuals are better

[81] Nickerson (2003) at p. 107.

[82] Hahn and Metcalfe (2016), pp. 10-11. (Citing research that Opower utility customers saved $1 billion dollars by not consuming an addition al 8TWh of energy)

primed to act because of social comparisons than others. Households who are already considered "green households" are more likely to change energy consumption practices than other groups who received a "Home Energy Report" comparing their consumption habits to others.[83] If governments hope to maximize on a comparison strategy, the best investment in this strategy is in the first roll-out of a comparison program. As an evaluation of the comparative electricity usage experiment indicated, the majority of households that changed energy consumption behavior did so when the reports were first introduced rather than later in the program.[84]

One possibility of creating a reputation "reward" scheme for ecological restoration would be to offer a set of guidelines like the LEED guidelines for building construction where individual landowners might be able to post on their property that they are engaged in platinum, gold, or silver levels of restoration depending on what types of investments they have made in their property. This type of program could reinforce future pro-environmental behaviors by giving an individual social recognition for their specific efforts such as the right to use a certain logo or mark on their property. Researchers have found that social praise will often motivate parties to undertake desirable actions.[85] Even if the effectiveness of social praise as an attitude generator and norm-reinforcer may wane over time, it can be instrumental in initially getting private actors to go beyond the status quo of nonaction.

In a place where landowners do not readily self-identify with pro-environmental behavior (weak environmental attitudes) and may not care about their individual reputation within the community (weak social attitudes), an individual "reward" approach such as a government tax credit might be effective in achieving certain behavioral outcomes. This may be particularly true for corporate actors who do not fit into the typology of actors already involved in restoration. The challenge with introducing tax credits is that extrinsic motivators in the form of financial rewards are less likely to substantially transform individual environmental attitudes that would lead to future non-compensated pro-environmental behaviors.[86] While individuals may not be swayed by financial benefits,[87] a private corporate landowner especially a corporate actor with fiduciary obligations to shareholders may be more likely to engage in restoration when a system of tax credits is available that might enhance corporate revenue.

Taken *in toto*, these types of government interventions might increase not just the level of engagement of private landowners but also the quality of efforts by individual landowners. While many of these proposals appeal to egoistic motivations (such as recognition), they may ultimately create social motivations for individuals who seek to be

---

[83] Hahn and Metcalfe (2016), p. 11.
[84] Hahn and Metcalfe (2016), p 12.
[85] Quinn and Burbach (2010), p. 201.
[86] Bruggen and Moers (2007) (Finding high levels of efforts from individuals who receive financial incentives to do one task and then reductions in efforts on any related tasks without financial incentives)
[87] von Tigerstorm et al. (2011) (Discussing that public tax benefit to encourage children to exercise more were unlikely to work successfully on encouraging behavioral change from parents because the credit would not be received until up to a year or more after the expense was incurred and might trigger an individual discounting of the value of a future benefit)

part of a larger community-based movement where they can share their experiences and support others in achieving outcomes.

b. *Building a Shared Community by Creating Special Purpose Restoration Districts*

Coordinating restoration actions across a landscape requires community commitment from a broad number of society members. One means of creating a community might be to mandate some level of community participation through the creation of special districts that assume specific responsibilities. Thompson has observed that special districts created by law, such as flood control, school, irrigation, and pest control districts, have overcome collective action challenges.[88] Governments might also create "ecosystem services districts" to further conservation.[89] This article proposes as a variation of an "ecosystem services district" creating "landscape level restoration districts" designed to coordinate restoration efforts among public and private actors within a specific geographical range.

The success of this proposal requires that community members share some degree of personal pro-environmental attitudes that might be gradually developed as described above. For example, a community might identify itself as a pollinator friendly community or a native plant community and define for itself certain annual actions. This type of self-identification is already happening across some communities in North America, Europe, and Oceania that are "bicycle-friendly communities" [90] or "international dark sky communities."[91] Without some degree of internalized norms that keep members engaged over potentially many decades, a community may wane on its long-term commitment to achieving objectives.

The building of a shared community offers an important starting point to coordinating heterogeneous actors. When individuals see others performing in pro-environmental ways, they may be more inclined to reproduce the same pro-environmental actions.[92] This idea is illustrated in the restoration context through Ted Turner's efforts to persuade other Western landowners to take on private conservation projects that are not mandated by law in order to improve landscape health.[93] The creation of inclusive communities accompanied by an individual's desire to be meaningful part of a group has the potential to change behavior by changing individual identities. As Professor Clayton has observed "a strong place-based identity can motivate action to protect a particular location, and a strong environmental identity can motivate action to protect the environment."[94]

One government model that might serve as a pilot for the creation of restoration "districts" is the U.S. program for Landscape Conservation Cooperatives. In February 2010, the U.S. Secretary of the Interior issued Order No. 3829 calling for large-scale

---

[88] Thompson (2002), p. 257

[89] Thompson (2002), p. 257; Heal (2001)

[90] The League of American Bicyclists, http://bikeleague.org/community (Describing a number of characteristics that qualify a community as a bicycle friendly community including the creation of a bicycle network and safety education campaigns)

[91] International Dark-Sky Association, http://darksky.org/idsp/communities/

[92] Sussman and Gifford (2011)

[93] See discussion above in Part 1: Group One "Big Personas'

[94] Clayton (2012) at p. 174.

coordination across landscapes to address adaptation to climate change including water management challenges, sea level rise, and shifting wildlife populations.[95] Twenty-two of these cooperatives (LCCs) have been formed to share information, created shared conservation objectives, and implement conservation strategies. Private landowners including businesses and tribal nations are encouraged to collaborate in the 22 LCCs and participate on steering committees. While a search of Landscape Conservation Cooperative website for the term "private landowner" found 59 items involving events, programs, and projects, most of these items focused on information exchange providing landowners with opportunities to learn more about conservation topics or reporting on studies involving ecosystem services.[96]

Landowners within an LCC might wish to experiment with the formation of a special purpose district to provide governance and funding for specific restoration efforts such as restoring salmon habitat in California or the U.S. Pacific Northwest or restoring tallgrass prairies in the U.S. Midwest. Within the United States, special purpose districts are created under State law, tribal law, or county legislation. These districts are sometimes called "benefit districts" and they are created as political subdivisions with legal rights and duties. Depending on the enabling legislation creating the district, the district may be a municipal corporation, a public corporation or some other designation. In some U.S. States such as Washington, laws provide for the creation of special purpose districts for conservation that are capable of levying special assessments on members. As of 2012, there are 48 such districts in Washington.[97] While these conservation districts might undertake some restoration activities, the purpose of such districts under the statutory code is to conserve soil resources and prevent flooding.[98]

The value in this proposal from the perspective of increasing participation among private landowners is that private landowners can participate directly in the governance of the special district and make decisions about how to invest pooled resources. What makes a "special district" attractive as a community governance model for environmental restoration is the possibility of the district serving to create a network among individuals who are in geographical proximity but socially separate. While the proposal for special districts may be peculiar to U.S. law, there may be similar local government mechanisms available in other legal systems such as "panchayats" in India or "communes" in Switzerland.

While these proposals are suggested to catalyze activity from landowners who have not been active in restoration efforts, designating a special district for restoration could be a powerful strategy for indigenous groups to proactively link their existing efforts to restore certain environmental amenities with other landholders as well as across State lines. Under various State laws, Tribes have the power to create an assessment district for themselves.[99]

---

[95] U.S. Department of Interior Secretarial Order No. 3289 (February 22, 2010) available at https://lccnetwork.org/sites/default/files/Resources/DOI_SecretarialOrder_3289A1.pdf

[96] See lccnetwork.org

[97] Washington Special Purpose Districts Overview, unicipal Research and Services Center of Washington (December 2012) available at http://mrsc.org/getmedia/81d0cdff-e5be-43cc-9d49-7b2a1ef91051/spdchart0112.aspx

[98] Revised Code of Washington Ch. 89.08

[99] See e.g. Political Subdivisions Act- Tulalip Tribes of the Tulalip Reservation, Revised Code of Washington Ch. 1.25.160.

Tribes who are already motivated to do restoration but may not have funds to do extensive restoration might propose the creation of a district that would be the start of a conversation among neighbors about how to protect shared ecological and cultural landscape values. One possible model for a network of restoration oriented landowners is the Chama Peak Land Alliance spanning an area of 1.4 million acres in the borderlands of southern Colorado and Northern New Mexico owned by individuals, tribes, and the government.[100] Approximately 250,000 of the acres in the area are owned by Alliance members. The objective of the Alliance to allow for landowners to "preserve and protect open spaces and ensure that the Colorado-New Mexico borderlands are managed not as a hodgepodge of private, state, federal and tribal interests, but as a whole, intact ecosystem." While the Alliance has minimal member dues, restoration projects are typically funded through philanthropy from a combination of partners located both within and without the Chama Peak region. The existing Alliance could pilot a "special district" approach to potentially create an even wider network of commitment across the region. The formation of the "special district" by interested members such as those already in the Alliance would help to overcome the "status quo" biases associated with taking the first steps to organize a coalition.

"Special districts" are a preferable model to other voluntary governance forms such as the homeowners association (HOA). The problem with relying on HOA's is two fold. First HOAs tend to be limited in scope and typically do not encompass landowners with sizable tracts of land but rather condominiums or suburban neighborhoods. Second, many HOAs are not environmentally progressive and this is reflected in the content of their covenants.[101] While it is possible for HOAs to support restoration objectives, this has not yet been the trend. For example, in 2002, two Austin, Texas homeowners who had an HOA covenant requiring them to remove weeds had to defend themselves for planting native wildflowers and shrubs in their lawn. [102] U.S. States have become more recently involved in trying to promote pro-environmental options for homeowners living under an environmentally restrictive HOA covenant. For example, Florida has legislation permitting homeowners to remove lawn and plant non-grass front yards. [103]

---

[100] Langlois (2016)

[101] Examples of covenants that do not reflect pro-environmental behavior:

- HOA in Cottleville, Missouri "Exterior solar collection systems, wind generator systems or other appliances are prohibited."
- HOA in Lisle, Illinois "Compost piles may not be created on any properties."
- HOA in Wichita Kansas Homes must have "seeded or sodded grass lawn on entire lot."
- HOA in Medford, Oregon "Lawns shall be watered, fertilized and sprayed for weeds and/or insects and diseases as needed to keep them healthy and green."

Examples taken from Cox (2007).

[102] Cox (2007)

[103] Florida Statutes Section 373.185 (3)(c) ("A local government ordinance may not prohibit or be enforced so as to prohibit any property owner from implementing Florida-friendly landscaping on his or her land."); "Florida-friendly landscaping" is defined, in part, as "quality landscapes that conserve water, protect the environment, are adaptable to local conditions, and are drought tolerant" Florida Statutes Section 373.185 1(b)

To the extent that a "special district" empowers an individual landowner to participate in a large-scale restoration project without having to shoulder all of the planning responsibilities or all of the upfront costs, the creation through legislation of such districts through legislation might provide needed institutional support for some landowners to overcome their status quo bias. In fact, the existence of the special district may even encourage leadership from some landowners who would not otherwise be participating in a restoration project except for their desire to ensure accountability for how their assessments will be spent. By pooling resources around a common mission, a "special district" may also be able to overcome some of the practical restoration challenges associated with obtaining appropriate seeds or seedlings since a district may be able to convince a plant nursery to contract to fulfill a large wholesale order. Such economies of scale would not be available to individual private landowners.

Conclusion

As States grapple with the consequences of the Anthropocene, there will be a growing need to strategize on how to expand restoration efforts. If ecological restoration efforts are to have long-term value then these restoration efforts must focus on reviving ecological functions at the level of landscapes and seascapes. To conduct restoration work at the landscape level in a number of States where there are large private landholdings will require coordinating with private actors who are the primary landowners. While some private landowners participate in active restoration of lands, there are many more private landowners who are not contributing to landscape level restoration. Because there are few legal obligations for private actors to undertake restoration of private lands, government effort to stimulate private actors to undertake restoration must address potential barriers that prevent private individuals from investing.

This article observes that the status quo bias is a powerful driver for individual inaction. This is particularly true for complex situations such as restoration work that require ongoing decisions. This article proposes two potential government nudges that might increase the number of private landowners participating in restoration efforts. First, the government may be able to offer nudges that contribute to changes in individual attitudes about restoration. Second, the government may be able to help facilitate community-level restoration work through the designation of districts.

The success of a given nudge will depend largely on what drives motivation for a particular individual. Private landowners who are motivated by egoistical interests may find a program that addresses their economic concerns and rewards them for taking certain actions a sufficient catalyst for undertaking restoration activities. Other private landowners who are concerned about reputational status might be more motivated by a policy intervention that compares individuals and recognizes best performers in a community. Finally landowners who have felt stymied by both the bureaucratic and technical hurdles of starting a restoration project might benefit from the regulatory streamlining of the process or even third-party guidance from a restoration practitioner on how to set and achieve restoration objectives. Governments, like ecological restoration practitioners operating in the field, must be prepared to experiment with different approaches to increase private participation in landscape restoration. There is no single formula for success but States operating a variety of governmental levels must be prepared to be creative in trying to fulfill their duties of ecological restoration.

References:

William Adams, et al. (2016) 'Creating Restoration Landscapes: Partnerships in Large-Scale Conservation in the UK' 21(3) *Ecology and Society* 1.

Christopher Anderson, (2003) 'The Psychology of Doing Nothing: Forms of Decision Avoidance Result from Reason and Emotion' 129(1) *Psychological Bulletin* 139.

Todd BenDor et al. (2014) 'Exploring and Understanding the Restoration Economy', https://curs.unc.edu/files/2014/01/RestorationEconomy.pdf

James Blake (1999) 'Overcoming the "value-action gap" in Environmental Policy: Tensions between National Policy and Local Experience' 4(3) *Local Environment* : 257.

Michelle Boercker (2010) 'Restoration Projects Support Nature's Pollination System' *River Partners Journal* (March 2010) http://www.riverpartners.org/news-and-events/newsletters/201003_PollinationSystems.html

Alexander Bruggen and Frank Moers, (2007) 'The Role of Financial Incentives and Social Incentives in Multi-Task Settings' 17 *Journal of Management Accounting Research* 25.

S. Burn and S. Oskamp (1986) 'Increasing Community Recycling with Persuasive Communication and Public Commitment' 16 *Journal of Applied Social Psychology* 29.

Kevin Cahill, (2011) 'Who Owns the World?' *New Statesman*, http://www.newstatesman.com/global-issues/2011/03/land-queen-world-australia

R.B. Chaves et al. (2015) 'On the Need for Legal Frameworks for Assessing Restoration Projects Success: New Perspectives from Sao Paulo state (Brazil) 23 *Restoration Ecology* 754.

Alienor Chauvenet and Megan Barnes (2016) 'Expanding Protected Areas is not Enough' 353(6299) *Science* 551.

Susan Clayton (2012) 'Environment and Identity" in Peter Nathan (ed.) *The Oxford Handbook of Environmental and Conservation Psychology*, Oxford University Press: 164-180.

Stan Cox, 'The Property Cops: Homeowners Associations Ban Eco-Friendly Practices' (April 25, 2007) available at http://www.alternet.org/story/51001/the_property_cops%3A_homeowner_associations_ban_eco-friendly_practices

Nancy Daiyi and Linda Ford (June 2002) 'Life in Country: Ecological Restoration on Aboriginal Homelands', *Cultural Survival Quarterly Magazine*, https://www.culturalsurvival.org/publications/cultural-survival-quarterly/life-countryecological-restoration-aboriginal-homelands

Alicia Eagly and Shelly Chaiken (1993) *The Psychology of Attitude*, Harcourt Brace Jovanovich.

Ed Fletcher (2015) 'Curtis Park Lawns Spark Debate During Drought' *Sacramento Bee* http://www.sacbee.com/news/state/california/water-and-drought/article28067194.html

Stephen Fleming et al. (2010) 'Overcoming Status Quo Bias in the Human Brain' 107(11) *Proc. Nat. Acad. Sci.* 6005.

Rose Garrett (2013) Tree Wars Brewing Over Removal of Nonnative Eucalyptus, SFist, http://sfist.com/2013/08/05/eucalyptus_wars.php

Robert Hahn and Robert Metcalfe (2016) 'The Impact of Behavioral Science on Energy Policy', 9 June 2016, https://www.brookings.edu/wp-content/uploads/2016/07/HahnMetcalfe-work-pap-eeep-616-v2.pdf

Geoffrey Heal et al. (2001) 'Protecting Natural Capital through Ecosystem Districts' Available at SSRN: https://ssrn.com/abstract=279114 or http://dx.doi.org/10.2139/ssrn.279114

Richard Hobbs and David Norton (1996) 'Towards a Conceptual Framework for Restoration Ecology' 4 *Restoration Ecology* 2.

Bruce Huber (2011) 'Transition Policy in Environmental Law' 35 *Harvard Environmental Law Review* 91

Edward Hume, (2009) *Eco Barons : The Dreamers, Schemers, and Millionaires who are Saving our Planet*, Harper Collins.

David Lamb, Peter Erskine, and John Parrotta, (2005) 'Restoration of Degraded Tropical Forest Landscapes', 310(5754) *Science* 1628.

Krista Langlois (2016) 'Where Private Land Meets Public Interest' High Country News, http://www.hcn.org/articles/where-private-land-meets-public-interest

Bruce Lindsay (2016) 'Legal Instruments in Private Land Conservation: The Nature and Role of Conservation Contracts and Conservation Covenants', 24 *Restoration Ecology* 5.

John D. Liu, (2011) 'Finding Sustainability in Ecosystem Restoration' http://www.kosmosjournal.org/article/finding-sustainability-in-ecosystem-restoration/

Richard Margerum, (2016) 'Theoretical Perspectives on the Challenges of Collaboration' in Richard Margerum and Cathy Robins (eds.) *The Challenges of Collaboration in Environmental Governance*, Edward Elgar.

Jonathan Remy Nash and Richard Revesz (2007) 'Grandfathering and Environmental Regulation: The Law and Economics of New Source Review,'101 *Northwestern University Law Review* 1677.

Cynthia Nickerson et al. (2011) United States Department of Agriculture, 'Major Uses of Land in the United States 2007' https://www.ers.usda.gov/webdocs/publications/eib89/10649_eib89_reportsummary.pdf?v=41055

Ray Nickerson (2003) *Psychology and Environmental Change*, Lawrence Erlbaum Associates.

Erlend Nilsen et. al. (2007) "Wolf Reintroduction to Scotland: Public Attitudes and Consequences for Red Deer Management." 274(1612) *Proceedings of the Royal Society B: Biological Sciences* 995.

Courtney Quinn and Mark Burbach (2010) 'A Test of Personal Characteristics that Influence Farmers' Pro-Environmental Behavior' 20 *Great Plains Research* 2.

Leighton Reid, (2016) 'South Africa 3: Town and Country: Aiming for Ecological Restoration at the Landscape'. https://mbgecologicalrestoration.wordpress.com/tag/working-for-water/

Benjamin Richardson and Ted LeFroy (2016) 'Restoration Dialogues: Improving the Governance of Ecological Restoration' 24 *Restoration Ecology* 5

William Samuelson and Richard Zeckhauser, (1988) 'Status Quo in Decision making', 1 *Journal of Risk and Uncertainty* 1.

P. Wesley Schultz and Florian Kaiser (2012) 'Promoting Pro-Environmental Behavior' in Peter Nathan (ed.) *The Oxford Handbook of Environmental and Conservation Psychology,* Oxford University Press: 556-580.

Eric Staats, (2016) 'Chinese Billionaire Wenliang Wang has Agreed to Donate Money for Long-Delayed Restoration of Dying Mangroves' *Naples Daily News*, 11 January 2016.

Cass Sunstein (2013) *Simpler: The Future of Government*, Simon Schuster.

Reuven Sussman and Robert Gifford (2011) 'Be the Change you Want to See: Modeling Food Composing in Public Places' 24 *Environment & Behavior* 738.

Anastasia Telesetsky, An Cliquet, and Afshin Akhtarkhavari (2017) *International Environmental Law and Ecological Restoration*, Routledge Press.

Abraham Tesser and David Shaffer (1990) 'Attitudes and Attitude Change', 41 *Annual Review of Psychology* 479.

Barton Thompson (2002) 'Conservation Options: Toward a Greater Private Role', 21 *Va. Envtl. L.J.* 245.

Barbara von Tigerstrom et al. (2011) 'Using the Tax System to Promote Physical Activity: Critical Analysis of Canadian Initiatives' 101(8) *American Journal of Public Health.*

Elizabeth Willott (2004) 'Restoring Nature, Without Mosquitos?' 12 *Restoration Ecology* 2