



Legible Landscapes: Incentivizing Forest Knowledge and Action in Southern Ontario

By Dr. Julia Smachylo

Abstract. Background: This paper traces the changing dynamics of forest management on privately owned land in southern Ontario, Canada, using the conceptual lens of state legibility to highlight how incentive programs are creating new ways of seeing and engaging in stewardship. Specifically, the Managed Forest Tax Incentive Program (MFTIP) and its corresponding Managed Forest Plan are investigated as a means through which a diversified field of knowledge has been activated to enable climate-conscious adaptive stewardship across the region. Methods: This case study uses a qualitative approach, incorporating document analysis, semi-structured interviews, and direct observation. Similar patterns and relationships within and across sites are identified to build theory and shed light on the socio-ecological context of private forest management. Results: Set within southern Ontario's history of forest management and the rise of neoliberal environmental governance, this paper contributes theoretically to scholarship on state legibility. The results illustrate a shift in stewardship on private lands through a rescaling of management responsibility that embraces different perspectives and builds place-based practical knowledge of forest systems. By mapping and building knowledge networks, diverse approaches to management have proliferated at the local and regional levels. These approaches have been influenced by previous management experience, different professional backgrounds, knowledge of participants, and the motivation of landowners to engage in active stewardship. Conclusion: The process of developing a management plan plays a key role in making landscapes legible to all stakeholders. The document also serves as an instrument of the state to build private landowners' and forest consultants' knowledge and capacity. This has set in motion a socio-ecological landscape strategy to address encroachment, invasive species, and climatic challenges in this increasingly urbanizing region.

Keywords. Environmental Governance; Forest Stewardship; Incentives; Legibility.

INTRODUCTION

Over two decades ago, Scott (1998) noted the tendency for natural resources to become separated from their broader ecologies through state abstractions of surveying, cataloging, establishing property rights, and mapping. These actions effectively exclude aspects of the environment outside of state interests to enhance governance. This deployment of selective state vision impacts the material environment, our bodies, and our knowledge of ecological systems. Recently, there has been renewed interest in how the state governs through territorial acts of legibility (Perry 2017). A growing body of research examines the central role of state legibility in addressing climate change (Parenti 2012, 2015) and how simplifications of ecological complexity have crafted new relationships between human and non-human nature (Perry 2021).

This paper contributes to scholarship on the application of state legibility, shedding light on the production of social knowledge in forest management in southern Ontario. The research design responds to the need for qualitative methods in conservation research (Bennett et al. 2016) and for additional studies that investigate the socio-ecological contexts of conservation (Moon et al. 2016). Using a case study of incentivized forest management known as the Managed Forest Tax Incentive Program (MFTIP)(MNR 2014), this study builds theory while also contributing to knowledge on the potential of private land forest management to inform more adaptive models of stewardship in practice.

The results of this research depict a rescaling of labor and responsibility in private forest management in the province. This has in turn set in motion a

different connection with the land, or in Scott's (1998) terms, a different "way of seeing" for stakeholders. While the provincial government (here, serving as the state) has gained knowledge of these territories through program reporting, the greater outcome is the impact of the Managed Forest Plan in making landscapes visible to stakeholders where the co-creation of the plan serves as a state instrument to promote local actors' knowledge and capacity. This form of state legibility is informed by local and expert knowledge with the ability to address encroachment, invasive species, and the climatic challenges forests face in this increasingly urbanized region. It is a different way to see and act and has set in motion a socio-ecological landscape strategy with the potential to support diverse management approaches as a fundamental component in the stewardship of these systems.

BUILDING THEORY AND INFORMING PRACTICE

This research focuses on private land forest management to build theory on (1) the role of state legibility in environmental conservation, (2) the role of state/nonstate actors in its delivery, and (3) the potential of managed forests to socially and biologically respond to climate change. In *Seeing Like a State*, James Scott (1998) defined *legibility acts* as the narrowing of vision by state actors applied to the management of complex environments. They are abstractions of nature attained through mapping, inventorying, and categorization. Scott (1998) notes that environmental knowledge includes both *mētis* and *technē*. *Mētis* is fluid practical knowledge that evolves over time and responds to place-based problem solving. He argues that its power "depends on an exceptionally close and astute observation of the environment" (Scott 1998). *Technē* constitutes technical knowledge that can be taught without tactile experience. It often takes the form of universal rules and principles and is generally measurable. Scott points to the role that the state and large-scale bureaucratic capitalism have played in the destruction of *mētis* knowledge in the pursuit of legibility. He cautions against the dismissal of this practical place-based knowledge and the standardization of ecological complexity.

A growing body of theoretical knowledge on state legibility in contemporary environmental governance points to the relevance of this concept. For instance, Parenti (2015) notes the central character of the state

as an "ecology making institution," one that applies territorial acts to make environments legible and accessible. He also brings attention to the renewed role of the state in addressing climate change, highlighting that it is precisely *how* the state responds that holds opportunity. In this regard, Perry (2021) sheds light on the potential of state legibility in building adaptive environmental capacity. While past scholarship on state legibility has primarily focused on state leaders' knowledge building and modern statecraft, less attention has been given to the importance of nonstate actors in the production of social knowledge (Rodríguez-Muñiz 2017). Thus, strengthening this area of scholarship can empirically and conceptually demonstrate how knowledge production is iterative and involves both state and nonstate participants (Emigh et al. 2016).

A critical dimension is the extent to which the application of state territorial acts of legibility are translated into practice. For instance, McCarthy (2002) emphasizes that what happens on the ground often varies from what laws and regulations dictate. In addition, Scott (1998) highlights the capacity of society to modify, subvert, and block the categories that are imposed on it. Is the MFTIP program an example of state legibility? If so, just how legible are these landscapes to the state, forest consultants, and landowners involved in the program? What does this shift in management regime entail for the future stewardship of private forest lands? While the choice of tax incentive policy tools encourages behavior that supports the objectives set by the state, more attention needs to be given to the role of nonstate actors involved in incentivized forest management and the degree to which they are translating state objectives to the landscape.

This paper also contributes to practice by adding to the discussion of strategic planning and adaptive management of forests in Ontario (Baker 2000; Francis 2000; Conservation Ontario 2023b). Current discourse on private land conservation in Canada has included multiple debates on preservation efforts related to biodiversity and how the provision of ecosystem services can be achieved by mobilizing individuals on private lands (Drescher and Brenner 2018). For instance, numerous studies have examined the role of private landowners in contemporary incentive conservation practices including: (1) the social-psychological determinants and behaviors of landowners (Drescher et al. 2017); (2) the role of expert knowledge in making

ecological decisions (Drescher and Edwards 2019); (3) the management of invasive species (Drescher et al. 2019); and (4) landowners' experience and attitudes towards their land (Drescher 2014). While this literature has provided rich contributions, less is known about the underlying theories of environmental governance that have driven these initiatives. In addition, little is known about the results on the ground of incentivized forest conservation in the province. Addressing the need for qualitative research in environmental conservation decisions (Moon et al. 2019), this study adds to our knowledge of the decision-making and social context of conservation to address future forest resilience in southern Ontario.

AREA OF STUDY

In Canada, forests are regulated entities, managed to meet various goals that have shaped both their form and ecological function (EPP 2000; Drushka 2003; OMNRF 2019). Forest policy resides at the provincial level, with less input from the federal and municipal governments. In addition, conservation authorities (nonprofit or charitable organizations run by elected municipal officials or municipally appointed members) support watershed and natural resource management and promote stewardship practices in the province (Conservation Ontario 2023a; Government of Ontario 2023). In Ontario, the southern region is the most biodiverse area of the country, with approximately 87% of forested land under private ownership (OMNR 1993; Strobel and Bland 2000). As a result, policies and programs that promote private land conservation are vital for regional conservation (Drescher et al. 2019). The following section gives insight into the rise of incentivized management in Ontario and the context of planning for climate change in the province.

Provincial Forest Management

The ongoing provincial management of private forested lands in Ontario has mobilized different planting strategies to counter environmental crises (Smachylo 2021). From the late 19th through to the early 20th century, the clearing of forests and resulting environmental degradation of the region spurred more direct provincial intervention in managing private lands to address soil erosion and promote regeneration (Zavitz 1976). During this time, the province of Ontario took an active role in the management of forests on private lands—especially in regions that faced a risk of ecological collapse (Aird 1996). For instance, Armson

and Taylor (2001) point to the increase of Ministry advisory services during the 1970s amounting to 40,000 inquiries and 5,000 inspections on privately owned woodlands by ministry staff.

However, in the 1980s in Canada, there began a marked transition from big government and central regional development strategies associated with environmental management. During this period, the rise of neo-conservative politics ushered in a new environmental management regime, one that cut funding and transitioned forest management on private lands to individuals and community groups (Barnes and Hayter 1994; Logan and Wekerle 2008). With the private land forestry programs of the 70s and 80s, the Ministry of Natural Resources (MNR) staff had provided services to private landowners, including tree planting, marking, and timber sale notice. However, between 1996 and 1998, two-thirds of the province's MNR forestry field inspection staff providing complementary management services to private landowners were laid off, which impacted the capacity of provincial agencies engaged in environmental management to carry out their roles and responsibilities (Winfield 2012). This labor shortage resulted in the government's transition from engagement out in the field to an office-based policy and administration focus. In addition, environmental incentive programs and grants for private land management became popular, with programs administered by government bodies as well as nongovernmental organizations (NGOs) at the national, provincial, and local levels. As a result, these resources no longer exist at the MNR, there is no longer the support for these staff, and this work is now facilitated through plan approvers and consultants (Interviewee 2).

In Ontario, forested lands have experienced pressure from urbanization and climate change. Here, woodlots are exposed to greater public use, encroaching development, infiltration by invasive species, and agricultural expansion, which has resulted in their conversion to other uses (OMNRF 2019; Strobel and Bland 2000). To counter these trends, public agencies, conservation authorities, and NGOs addressing forest management and conservation have encouraged private landowners to participate in sustainable management (MNR 2012; Conservation Ontario 2023b). In addition, to address the impacts of climate change on the region, the province has recently launched a 2-billion trees initiative as part of the country's climate plan, "A Healthy Environment and a Healthy

Economy” (ECCC 2020). This initiative leverages the abilities of existing and planted trees on both private and public lands as a means to draw down and anchor carbon using nature-based climate solutions (PMO 2021). Thus, it is in the interest of the province to retain and support the health of forested lands that already exist in the region and plant new trees.

Incentivized Forest Management: The Managed Forest Tax Incentive Program

The Managed Forest Tax Incentive Program (MFTIP) has been recognized as one of the most successful forest conservation programs offered in Canada (Cockwell 2012). At the provincial level, the Ministry of Natural Resources and Forestry (MNRF) administers the program and sets the parameters for sustainable forest management. Forest consultants associated with a private service or a Conservation Authority called Managed Forest Plan Approvers (MFPAs) are independent contractors licensed by the province. MFPAs assess forested land and submit a Managed Forest Plan to the province, which directs the actions of private landowners. NGOs, such as Forests Ontario and the Ontario Woodlot Association, provide additional landowner resources and support (Forests Ontario 2020; Ontario Woodlot Association 2023). Lastly, private landowners, or in some cases Conservation Authorities, are responsible for the active management of the land tied to their Managed Forest Plan.

Since the mid-90s, participation in the MFTIP program has grown, with approximately 20,100 properties covering almost 1,925,000 acres in 2022 (MFTIP Administrator, Ministry of Natural Resources and Forestry, personal communication). To qualify, landowners are required to have at least 4 hectares of eligible forestland and must submit an approved Managed Forest Plan every 10 years. Once in the program, landowners are taxed at 25% of the municipal tax rate set for residential properties, and the land is converted to the managed forest property land classification (MNR 2023). The tax reduction garnered by a particular landowner in the MFTIP program corresponds with the assessment of regulated rates per acre based on similar properties in the vicinity (MNR 2023; MPAC 2023). The required management plan involves both a written report and mapping component and can be audited by the province during the approval period. The amount of detail in these plans depends on the landowners and their objectives. A Managed Forest

Plan includes the following information: property information, such as the land’s legal description, landowner details, location, and the history of the property; mapping that shows the local and surrounding context, types of forest cover, natural, and physical features; landowner objectives and goals for the next 20 years that align with financial ability, knowledge level, time and property features; as well as a detailed property inventory that maps environmental compartments such as land cover, wildlife, and other vegetation (MNR 2012). Figure 1 shows a partial example of a Managed Forest Plan.

METHODS

Procedures: Research Design and Data Interpretation

This qualitative study using an exploratory case study method responds to scholarship that calls for research in conservation that investigates socio-ecological contexts (Bennett et al. 2016; Moon et al. 2016). This approach can provide a wide variety of evidence, add rigor to the study of complex environments (Yin 2017), and inductively build theory (Eisenhardt and Graebner 2007). This paper draws from qualitative evidence to offer new insight and develop the conceptual framework of state legibility. The results are based on document analysis, semi-structured interviews, and direct observation. Data collection began with an analysis of policy documents that are available from provincial websites, grey literature, and archival literature. The data included MFTIP program instructional literature, peer-reviewed articles on environmental and incentivized forest management, book chapters and articles on the history of forestry in Canada and Ontario, and archival policy documents and reports available from the Ontario Archives.

Conducting interviews with stakeholders for conservation research provides valuable data on the knowledge, values, and decision-making processes (Young et al. 2018). Semi-structured interviews were conducted from 2016–2020 with individuals involved in forest management in southern Ontario including: landowners ($n = 12$), managed forest plan approvers ($n = 21$), conservation authority representatives ($n = 3$), and program administrators/affiliates ($n = 2$). Interviewees were identified through their connection to forest management in southern Ontario and with the MFTIP program. Several sampling strategies were used. Key informant sampling was used for program

Section 5: Landowner Objectives

5.1 General objectives

For the next 20 years, these objectives are important to us.

Management Objective	Least important		Most
	important		
Environmental Protection			
Forest Products			2
Investment			
Recreation			1
Wildlife			
Nature Appreciation			

5.2 Details about property level objectives

Why each of the selected objectives is important to us.

Recreation – The property is used for hiking and exploring, especially the woodlands.

Forest Products – Proper management of the plantations will generate revenue for the family, maintain forest health, and increase forest diversity.

5.3 How we will achieve our objectives

The plantations are soon due for thinning. The NVCA will help to find a logger to complete this.

Page 4

Section 6.1 - 2008 Airphoto Compartment Map

Compartment Summary:
P1 = 21.4 acres, P2 = 7 acres, W1 = 6.1 acres, W2 = 11.5 acres

Page 6

Section 7: Managed Forest Compartment Description

7.1 General Description – Compartment P1

Compartment area: 21.4 acres
Open area description: There are landings, access roads, and trail intersections that total 2 acres.

7.2 Compartment Site Characteristics

Soil type: Sandy loam.
Drainage: Well, with a small imperfect section
Topography: Mostly flat, with some rolling sections.
Water features: There is a small seasonal stream.
Access: There is a well defined series of roads, trails, and landings

7.3 Compartment History

The compartment was planted by machine in 1979. There are no records of the planting, but it was likely completed through the Woodlands Improvement Act (WIA). The planting consisted of pure blocks of Red and White pine, White spruce, with 2 small section of Silver maple and Red oak..

7.4 Compartment Inventory

Tree species	Per cent Composition	Tree Age	Average Tree Height (m)	Average Diameter at Breast Height (cm)
Red pine (Pr)	65% (14 acres)	33	16.9	20.2
White pine (Pw)	20% (4 acres)	33	14.1	20.6
White spruce (Sw)	10% (3 acres)	33	16.5	21.5
Red oak (Or), Silver maple (Ms)	5%	32	14.8	19

Compartment Information Summary Table

Species composition (%)	Pr 65, Pw 20, Sw 10 (Or,Ms) 10
Average age (yrs)	33
Average height (m)	16.4
Basal Area (m ² /ha)	-
Tree Density (stems/ha)	1,900

Page 8

7.5 Wildlife and Habitat

Habitat feature	Details/comments
Standing dead trees	None.
Cavity trees	None.
Supercanopy trees	None.
Mast trees	None.
Conifer thickets	None.
Stick nests	None.
Woody debris	None.
Dens or dug holes	None.
Pits and mounds	None.
Wildlife trails	None.
Deer wintering yard	None.
Other food sources	None.

7.6 Specific Objectives

Long term management objectives (what we want this compartment to be like in 20 years).

We want to have a healthy plantation.

Short term management activities (what activities are planned over the next 1-10 years that will help to reach the long term objectives).

The plantation should be thinned in the next 1-3 years in order to maximize stand potential. A standard first thinning – complete removal of every 4th row, would be sufficient and relatively simple to implement. The plantation has good access throughout for heavy equipment.

Page 9

Figure 1. Example from a Managed Forest Plan.

administrators and forest consultants who were identified from the MNRF online contact list. In addition, snowball sampling was used to identify landowners. Interviewees were emailed an IRB (Institutional Review Board)-approved description of the study. If they expressed interest in participating, a more detailed outline of the research and the interview questions were provided before the interview.

Interviews lasted approximately one hour using semi-structured questions so the interviewer could follow-up and investigate interviewees' knowledge. Young et al. (2018) suggest that the flexibility of a semi-structured approach is important in the investigation of complex conservation science-policy interfaces (See Appendix for interview questions). During the interview, the interviewer also elicited feedback on the initial findings. Interviews stopped once the new information reached a saturation point. In addition, the researcher conducted a visit to the landowners' forests to gain insights into site management. Photography and video recordings documented the site context.

Data Analysis

Based on the data from the document analysis, interviews, and participant observation, the researcher identified and interpreted similar patterns and relationships within and across the sites of implementation to build theory (Eisenhardt and Graebner 2007). A review of the literature, policy, and government documents was used to position the MFTIP program within the legacy of forest management practices on private lands in the province to identify how the changes in administration impacted stakeholders. Interviews were transcribed and coded as a heuristic device to analyze the data and synthesize it into meaningful categories and themes.

It is important to note the strengths and limitations inherent in this qualitative research design. One constraint was the challenge of acquiring a representative sample of landowners in the MFTIP program, as there is no public database of participants. As a result, to gain access to this population, a snowball sampling strategy was necessary. Program participants generally were those in good standing in the program, as opposed to those who were less dedicated to the active management criteria. In addition, the author's disciplinary background in urban and landscape design, urban theory, and geography, as well as professional experience, shaped the approach to and analysis of the research findings (Easterby-Smith et al. 2008) and

may have also filtered how the data is transformed into knowledge (Saldaña 2021).

RESULTS: STATE LEGIBILITY TOOLS AND PROCESSES

The results of this study reveal an example of a different type of legibility act involving both a change in how forests are "seen," and the rescaling/integration of top-down and bottom-up processes that combine *mētis* and *techne* knowledge. This approach leverages tools of state legibility (the map) as an educational device to understand complex forest systems where both the *product* and collaborative *process* of mapping are important.

The primary directive device of MFTIP is the Managed Forest Plan. It is a tool to make forested lands legible to the province, forest consultants, and landowners. Developing the plan usually involves a landowner working with a provincially approved plan approver to outline their long- and short-term stewardship goals. The Managed Forest Plan and reporting timeline encourages forest stewardship and increased landowner awareness by providing a framework for sustainable forestry on private lands. It also encourages landowners to actively manage their forest land in a responsible manner with the goal of minimizing the decline of forest cover.

It is the author's argument that state legibility in this context goes beyond the map to also include the *process* of mapping. Through this process, landowners learn how to see the forest in new ways and are educated in sustainable forest management. The process of developing the management plan involves collaborative mapping, discussion in the field, and setting short- and long-term objectives. The result is a transfer of knowledge of forest stewardship from forest consultant to the landowner and a reciprocal transfer of place-based knowledge from the landowner to the consultant. Drafting these plans entails mapping the forest into different ecological compartments and delineating a strategy for sustainable management that combines science-based principles, provincial standards, and landowner values. This knowledge is translated into goals, objectives, and interventions for the property, ranging from harvesting timber to supporting biodiversity.

Thus, private land forest conservation under MFTIP is achieved through provincial reporting requirements (the map) and collaboration with managed forest plan approvers (approved by the province). However, it is

important to consider what is lost and gained by this shift in management. Does incentivized private forest stewardship contribute to the health and sustainability of these ecological systems? The findings of this study indicate that the *product* and *process* of mapping enhance stakeholders' understanding of forest management at the local and regional levels. The results also reveal what types of knowledge are successfully translated into practice as outlined in more detail below.

Legibility at a Regional Scale

In MFTIP, Managed Forest Plan Approvers are the educational gatekeepers who have provincial training in forest stewardship. They can read the ecological context of the site and co-construct the plan based on landowner values and provincial requirements. The presence of MFPAs differentiates MFTIP from previous provincial in-house management. They are the primary educational instrument of the state and are monitored through grading sheets that highlight specific objectives that are then translated to the field. As one interviewee states: "They are looking for certain specific things to be passed on, so that the landowner is getting that knowledge. I don't think that the province is as concerned with possessing that knowledge as they are with that knowledge being passed on to the landowner" (Interview 2). Landowners' knowledge about their property and forest management varies widely, and MFPAs identify management opportunities that should or could be carried out on the property. In this sense, MFPAs support Rodríguez- Muñiz's (2017) argument that nonstate actors play a role in the orchestration and construction of state legibility. Here, MFPAs are part of the process of passing management knowledge on to the landowner, which has become a key outcome of the program.

All of the MFPAs working with this program in this study mentioned that preparing the management plan was important in regard to reciprocal education between the landowner and consultant. When drafting the plan, MFPAs most often meet with landowners and walk the property, which provides an opportunity for both parties to exchange important knowledge. Walking the land is especially pertinent to the management of invasive species, where it is up to the approver to identify these and refer the landowner to programs (many run by NGOs) that can be partnered with MFTIP to help with their removal. In the interviews, the MFPAs' knowledge was seen as essential in guiding and drawing up the Managed Forest Plan

for the landowner to follow. They ensured that participants set realistic objectives that align with their overall goals for the property and what they can accomplish within the timeframe. This reciprocal transfer of knowledge between the MFPAs and landowners was often mentioned in interviews with forest consultants and landowners as one of the main outcomes of this program. Forest consultants also noted that it is especially important in shaping landowners' preconceived notions about forest management. One MFA stated: "So then it becomes an educational half-hour with them because I'm teaching them that cleaning up the bush is not what you want to do in regard to sustainable management" (Interviewee 12). Another interviewee reiterated that: "The MFTIP program is that steppingstone to get them [landowners] in touch with a proper consultant or a plan approver that can educate them on good forestry practices and maybe give them advice as to what management that woodlot might require. And a lot of it does involve active management" (Interviewee 2).

When investigating the nature of the knowledge exchange and the preparation of the Managed Forest Plan, the background of the MFA was considered an important contribution. Their knowledge impacts what management is being implemented on these properties, which provides an educational resource for the landowner. MFPAs have diverse backgrounds and may be trained as arborists, foresters, or landscape architects, which results in the integration of different values and ways of reading the land when developing the management plan. One interviewee summarized the different lenses of viewing forest management as, "An arborist will say that a big tree is over-mature, a forester will say it's great timber, and ecologists will say its old growth. It's the same tree—so that's just a basic bias among three different people looking at the same tree" (Interviewee 12). However, one interviewee noted that there are different perspectives on what proper management entails based on one's background (Interviewee 5). An MFA interviewee, who is also a registered professional forester, said, "I can really see the value of well-managed, long-term objectives—in how well they pay off for economical, ecological diversity and environmental objectives. I tend to think that a lot of these other plans that have been authored by someone who might be a landscaper or a lumberjack or arborist...they don't quite get the full perspective of it" (Interviewee 18).

The different perspectives and backgrounds of MFPA are not necessarily a detriment to the program or landscape, as they can introduce variability and diversity. An MFPA also stated, “I also recognize that by having a bit more of a diverse group of people that can approve these plans, you are also adding value by bringing other perspectives. We might bring in more people to the program, more people thinking about forest management and actually thinking about forest products and the importance of forests. By having more people involved in the program you get a greater knowledge base to draw from. So, I wish every forest plan approver was a professional forester or a forest technician. But yes, I also recognize that there are also a lot of other benefits from different perspectives” (Interviewee 18). Although variability in MFPA’s experience can impact landowner management plans, and landowners may miss out on other perspectives that are also beneficial, MFPA’s inconsistent backgrounds could also be a strength. Introducing variability to the landscape ecologically has benefits for the resilience and adaptation of these natural systems. Incorporating a more diverse group of MFPA adds value by bringing different perspectives at the local level, attracting a broader range of landowners to the program and ultimately expanding landowners’ overall knowledge base.

Legibility at the Site Scale

Local landowner knowledge of forested lands is essential for the success of the MFTIP program. Good stewardship involves the ability to read the land to understand its hydrology and at-risk areas. Thus, landowners need to gain broad knowledge, including identifying and protecting sensitive plant species or zones with significant ecological value, such as headwater streams and wetlands. This knowledge is gained by mapping forest compartments in the preparation of the Managed Forest Plan. Three main themes emerged inductively from the interviews and participant observations. In terms of landowner impact, these themes include the: (1) knowledge of program participants, (2) motivations driving management, and (3) the implementation of the management plan.

Knowledge of Program Participants

Interviewees stressed the variability of landowner knowledge of forest stewardship in MFTIP. Their knowledge often depended on how long they had lived in and around the property. One interviewee

explained, “It depends on how long they’ve been in the area. You certainly have new landowners coming through the area who are completely new and don’t have any knowledge of the property or the wider area in general. Conversely you do have landowners who have been on the property for longer than I’ve been alive and can tell you everything on the property, and there are definitely components that rely heavily on that history” (Interviewee 2). Thus, the interviews with landowners in the program revealed that participants might be engaging in forest management for the first time, with limited knowledge of their acreage or the wider ecological context. However, other landowners may have lived on their property for years on land that was passed down through generations. These participants were often able to recall detailed information about the history of their land.

Some MFPA reported that landowners’ knowledge was increasing since the beginning of MFTIP, but some maintained that it had stayed fairly consistent or decreased over their years in the program. Nevertheless, interviewees cited landowners’ forest stewardship knowledge as the main educational function of MFTIP and as one of the main outcomes of the program. However, while many MFPA noted that the Managed Forest Plan could be a great tool to disseminate knowledge, they also acknowledged that many people participated primarily for the tax break, which limited the amount of active management undertaken.

Motivations Driving Management

A second impact of the program is connected to landowners’ changing management ideologies. MFPA interviewed cited landowners’ changing understanding of *nature*. They described the difference between landowners who had grown up on the land or who had experience in more rural areas compared to those who had recently relocated from the city. Landowners had a range of ideas of what management entailed. Their diverse attitudes influenced stewardship activities that ranged from more intensive involvement to a hands-off approach. For example, one MFPA described this attitude: “Landowners want to be part of the solution and protect the land by not cutting anything down, which is not necessarily good forest management” (Interviewee 1). These landowners seemed to want to simply enjoy the property or protect forest land instead of actively managing the property as required by the program. One MFPA claimed that, “A lot of people would like to see no cutting in our

county forests, and I think this is happening on the private lands as well. As a lot of people retire into this area and buy properties, forest management is low on their priority list. Cutting a tree is the last thing they wanted to do on their property, even though they just don't understand that you can cut the trees and still have a healthy, sustainable forest" (Interviewee 18). Thus, landowners' understanding of what forest stewardship entails begs the question of how 'active' landowners actually are in the program.

To address this question, most MFPA's mentioned that one of the roles of the program was to change landowners' understanding of what active forest management entails. Whereas many landowners may have originally wanted a piece of nature to protect, through their experience they become forest stewards who engage in sustainable forest practices. One MFPA stated, "...because they [the landowner] are involved with MFTIP, they become better educated and very often do get involved towards the next step to have more intensive sustainable forest management. But they do so with the awareness and protection of the program requirement that they do it according to good forest practices" (Interviewee 8). Another MFPA described a similar process of engagement: "Some of them [landowners] do, some are very engaged. Others are just looking for the tax incentive. Some are a bit older, so they might not be as mobile for getting around their property, but generally I would say that landowners are familiar with their property. They are generally engaged and, typically, when they start working with us [MFPA's], they become more engaged because now they are working with people who have more knowledge than them about the forest and [we] can teach them something about their forest. [We] can help them to focus in on what goals and objectives and management activities they would want to consider. I would say most are engaged and most have at least a basic knowledge of their land though not necessarily what tree species they have." (Interviewee 4).

Implementation of the Management Plan

Lastly, private forest consultants repeatedly cited inconsistency in the follow-through of landowners concerning their management goals. Despite the program's overall objective of active management, there was considerable variability in the implementation of the plan (Interviewee 4). Landowners can stay in the program if they file a 5-year review and 10-year plan, even with minimal intervention. MFPA's reported that

minimal intervention was somewhat normal, as the program is flexible and understands that landowner goals or abilities might change—especially if they do not rate the economic return of their property as high as their desire for recreation. One MFPA's analysis was, "Overall [MFTIP] is leading to somewhat better management and better education of landowners. On the negative side, I think there are more landowners than I would like who are only concerned with the tax break. And when I give them the plan that I've spent many hours preparing, they put it on a bookshelf and they never look at it" (Interviewee 7). Landowners' attitudes varied widely from those who viewed the MFTIP as a great educational tool to learn about their property and forest management to those who were more interested in the tax reduction. However, despite the initial draw of the tax reduction, MFPA's reported that landowners generally do become more involved in active management after acquiring basic knowledge of their land and the potential benefits of forest stewardship.

Another interesting finding is the transfer of knowledge among stakeholders. For some participants in the program, it was their first time engaging with land management, but for others, their family had been involved for generations. The Managed Forest Plan documented the many interacting values and processes occurring at the site level for both the MFPA's and the landowners. The document helped them negotiate the many ways of perceiving forest systems. Once these aspects were mapped and inventoried, the knowledge was combined with ecological principles of sustainable forest management and landowner short- and long-term objectives. The resulting plan not only documented the history and current state of the forest, but also mapped the subsequent trajectory. This mapping of the material environment and of the labor required for management provides a clear picture through time and plays an active role in future forest dynamics. As one interviewee stated: "I think that that speaks to the power of the incentive program and the merits of 'the carrot approach' over 'the stick.' For what it's worth, from what I see through the program are forest owners becoming more engaged and more invested in their forests—spending more of their time and they get to know it and improve it. There is a sense of pride of stewardship that develops. And that has immeasurable value as people start looking at their forest as a long-term legacy" (Interviewee 8).

Rather than promoting standardization, this form of incentivized conservation is building fluid, practical, place-based knowledge among stakeholders over time. Counter to state and large-scale bureaucratic capitalism approaches that have the potential to be destructive to *mētis* knowledge (as outlined by Scott 1998), incentivized provincial conservation is facilitating a new way of “seeing” by landowners, by plan approvers, and by the province. These findings show that despite the loss of local management knowledge from the central government and provincial staff who helped with forest management on private property in the past, this knowledge has been replaced by the increased ability of alternative actors (i.e., MFPA and landowners) at the site level. This transition constitutes a rescaling of knowledge that impacts management practices. Consequently, new geographies of managed forests in southern Ontario have emerged where landowners, consultants, and government employees coproduce capacity and action in the field.

DISCUSSION

Forests on private land in southern Ontario have been shaped by economic and institutional structures that help the government manage these systems. Incentive programs such as MFTIP are part of this governance strategy, where landowners are charged with undertaking sustainable forest management. Within this context, climate change presents a challenge. The literature recognizes that central government and state legibility acts will have a role to play in addressing climate change due to the necessity of large-scale orchestration (Parenti 2015). However, how can state approaches address climate change while avoiding the pitfalls of a synoptic standardizing view outlined by Scott (1998)?

This research reveals a different type of legibility act that activates rather than destroys *mētis* knowledge. One where “seeing like a state” in the context of forest management on private lands in the province of Ontario constitutes seeing from multiple perspectives. Abstractions of the biological world are now geared towards the production of socio-ecological systems of stewardship through surveying, mapping, monitoring, and action. The design of this program has scaled responsibility and integrated local, ongoing, place-based knowledge. This approach is still run by the state but differs from Scott’s version in that it facilitates and leverages a combination of coproduced

mētis and scientific knowledge. It also is flexible in its application with the potential to address future climate impacts at the site and regional level.

Coproducing Knowledge

This paper argues that provincial incentive programs and the rescaling of forest management on private lands from the government to private actors (i.e., landowners) has helped build *mētis* and *techne* knowledge at two levels: (1) at the property level by activating landowners, and (2) at the regional level through consultants. By promoting the concept of legibility in the context of incentivized forest conservation in southern Ontario, *mētis* is present in the learned tacit knowledge of landowners who interact with their property over time—it is the ability to read the landscape over seasons and anticipate future management work as the land changes. Such knowledge and skills are increasingly relevant to respond to the impact of climate change and to pursue future resilience and adaptation planning that address more frequent stints of drought, disease, and invasive species. They can also monitor the effects of encroaching urban development or land-use change on their property.

In addition, forest consultants develop *mētis* knowledge. Based on their years of experience, they can walk the land with a landowner and point out areas the landowner should watch for. Here, forest consultants can develop a regional *mētis* associated with private land management, where over time, by visiting various properties, they gain a wider perspective. Along with this experiential understanding, they can also provide *techne* (i.e., ecologically based scientific knowledge that infiltrates ways of seeing the forest). Thus, while there has been a loss of tacit knowledge from the provincial government, this knowledge has been replaced by landowners’ increased ability to respond at the local level.

Flexible Management and Capacity Building in a Changing Climate

Since the mid-90s, MFTIP has attempted to address evolving environmental change. Both MFPA and landowners mention a greater recognition of the need to include climate change planning in the Managed Forest Plans. MFPA also referenced this flexible character of the program as important to allow the program to adapt in response to increasing climate challenges. While adaptation to climate change was

not initially a high priority, those who now manage forests focus on being resilient to future changes. For instance, one MFPA noted that, “they [landowners] can refine their skills to recognize and monitor emerging forest stressors, such as hemlock woolly adelgid, emerald ash borer, butternut canker, beech bark disease, and changing climate impacts” (Interviewee 8).

Researchers and practitioners have identified forest systems as integral to nature-based mitigation and adaptation strategies to address global climate concerns and the loss of biodiversity (IPCC 2022). In southern Ontario, management practices that add to and retain existing woodlands and forested lands are needed to address these issues. Here, stewardship practices, such as those promoted by MFTIP, can contribute to provincial goals that aim to go beyond Paris Agreement targets to reduce greenhouse gas emissions and remove carbon dioxide from the atmosphere (Paris Agreement 2015). For instance, recent commitments by the Canadian federal government have highlighted forests as part of a nature-based climate strategy that supports the planting of 2 billion trees on public and private land. In particular, the government has committed to the conservation of 25% of the land and oceans by 2050 (PMO 2019; ECCC 2020; PMO 2021). Stewardship practices resulting from MFTIP can also help support the climate-forward work of Conservation Authorities who are building resilience to climate change through the management of natural systems (Conservation Ontario 2023b).

In interviews, MFPAAs cited the flexibility of MFTIP as a strength in building a resilient socio-ecological regional infrastructure to address the future health of forest systems. One MFPA pointed to the fact that the study materials for the MFPA exam now include information on planning for climate change and invasive species (Interviewee 3). In addition, since the program’s inception, it has become more flexible in its landscape requirements and has loosened the conditions regarding the amount of allowable open areas and wetlands, recognizing the ecosystem benefits of these features, which has allowed for previously ineligible properties to apply for the program and thus has played a role in increasing the amount of land under active stewardship (Interviewee 18).

The program has also shown the same flexibility in response to invasive species. The initial program in the mid-90s had less emphasis on the impacts of invasive species and changing forest stressors. However,

interviews noted that the program has been flexible enough to promote adaptation to changing conditions. For example, it requires landowners to periodically take stock of their forest conditions by reconsidering and rearticulating their objectives every 10 years. They must also have a reasonable plan to achieve these objectives. One MFPA interviewed noted that, “the plans, landowners, and the landscape can adapt as the conditions change. More landowners are learning about the importance of building resilience into their forests over time” (Interviewee 8). The program has also familiarized landowners with partner NGOs, government extension/conservation programs, and resources that are available to them. The tax incentive component of the program addresses land use pressure to keep existing forests intact, especially in regions where converting land to other uses is more financially viable. Thus, although the province no longer has internal staff with local property-based knowledge, the program now enables collaboration of management activities to address shifting environmental contexts. However, this knowledge relies on the agency of MFPAAs and landowners to include strategies to address changing conditions in their plans and to follow through with their objectives.

CONCLUSION

This paper focused on incentivized conservation as a case study of state territorial acts that make environments legible and the role of this program in addressing climate change to promote more viable adaptation responses.

The results point to an example of state legibility that builds, rather than dismisses, *mētis* knowledge. The case study of the MFTIP program in Ontario highlights how the devolution of forest management to different institutional scales, or to actors outside the government, has supported a flexible and dispersed model that brings an enhanced ‘messiness’ into management. While the state gains knowledge of these territories through incentive program reporting, the main outcome is making landscapes visible to those outside of the government. It serves as an instrument of the state—an ecological form of statecraft—that promotes the *mētis* and *techne* knowledge of local and regional actors.

In fostering an ecological ethic among stakeholders, the translation of MFTIP in practice highlights various ways in which landowners and forest consultants

build knowledge that is informed by stakeholder management experience, professional backgrounds, knowledge, and motivation to engage in stewardship. Here, the process of developing a management plan plays a key role in making landscapes *legible* to all stakeholders. The managed forest plan also serves to build landowner and forest consultant knowledge and capacity. This has set in motion a socio-ecological landscape strategy that is context-informed, flexible, and attuned to managing for a changing climate. Thus, MFTIP plays a role in the region's ability to adapt over time through both physical intervention and in the development of a more informed and active civil society. As a tool of governance to address the health of forests in a changing climate, this form of management offers an example of how the state might respond through territorial acts that build ecological and social capacities.

LITERATURE CITED

- Aird P. 1996. *Forest legislation: A digest of the statutes of Ontario*. Richmond Hill (ON, Canada): Ontario Professional Foresters Association and Ministry of Natural Resources.
- Armson KA, Taylor P. 2001. *Ontario forests: A historical perspective*. Markham (ON, Canada): Fitzhenry & Whiteside. 233 p.
- Baker J. 2000. Landscape ecology and adaptive management. In: Euler DL, Perera AH, Thompson ID, editors. *Ecology of a managed terrestrial landscape: Patterns and processes of forest landscapes in Ontario*. Vancouver (Canada): UBC Press. p. 310-322.
- Barnes TJ, Hayter R. 1994. Economic restructuring, local development and resource towns: Forest communities in coastal British Columbia. *Canadian Journal of Regional Science*. 17(1994):289-310. <https://idjs.ca/images/rcsr/archives/V17N3-Barnes-Hayter.pdf>
- Bennett N, Roth R, Klain SC, Chan KMA, Clark DA, Cullman G, Epstein G, Nelson MP, Stedman R, Teel TL, Thomas REW, Wyborn C, Curran D, Greenberg A, Sandlos J, Verissimo D. 2016. Mainstreaming the social sciences in conservation. *Conservation Biology*. 31(1):56-66. <https://doi.org/10.1111/cobi.12788>
- Cockwell M. 2012. *The forest of Canada: A study of the Canadian forestry sector and its position in the global timber trade*. Toronto (ON, Canada): Limberlost Forest & Wildlife Reserve. 374 p.
- Conservation Ontario. 2023a. About Conservation Ontario. Newmarket (ON, Canada): Conservation Ontario. [Updated 2023; Accessed 2021 April 28]. <https://conservationontario.ca/about-us/conservation-ontario>
- Conservation Ontario. 2023b. Role of Conservation Authorities in Mitigation and Adaptation. Newmarket (ON, Canada): Conservation Ontario. [Updated 2023; Accessed 2023 April 28]. <https://conservationontario.ca/policy-priorities/climate-change/mitigation-and-adaptation>
- Drescher M. 2014. What is it like to take care of the land? Toward an understanding of private land conservation. *Rural Society*. 23(2):117-132. <https://doi.org/10.5172/rsj.2014.23.2.117>
- Drescher M, Brenner JC. 2018. The practice and promise of private land conservation. *Ecology and Society*. 23(2):3. <https://doi.org/10.5751/ES-10020-230203>
- Drescher M, Edwards RC. 2019. A systematic review of transparency in the methods of expert knowledge use. *Journal of Applied Ecology*. 56(2):436-449. <https://doi.org/10.1111/1365-2664.13275>
- Drescher M, Epstein GB, Warriner GK, Rooney RC. 2019. An investigation of the effects of conservation incentive programs on management of invasive species by private landowners. *Conservation Science and Practice*. 1(7):e56. <https://doi.org/10.1111/csp2.56>
- Drescher M, Warriner GK, Farmer JR, Larson BM. 2017. Private landowners and environmental conservation: A case study of social-psychological determinants of conservation program participation in Ontario. *Ecology and Society*. 22(1):44. <https://doi.org/10.5751/ES-09118-220144>
- Drushka K. 2003. *Canada's forests: A history*. Montreal (QC, Canada): McGill-Queen's Press. 105 p.
- Easterby-Smith M, Thorpe R, Jackson PR. 2008. The politics and ethics of management research. In: Easterby-Smith M, Thorpe R, Jackson PR, editors. *Management research*. London (United Kingdom): Sage Publications. p. 113-139.
- Eisenhardt KM, Graebner ME. 2007. Theory building from cases: Opportunities and challenges. *Academy of Management Journal*. 50(1):25-32. <https://doi.org/10.5465/AMJ.2007.24160888>
- Emigh RJ, Riley D, Ahmed P. 2016. *Antecedents of censuses from medieval to nation states: How societies and states count*. London (United Kingdom): Palgrave Macmillan. 277 p.
- Environment and Climate Change Canada (ECCC). 2020. A healthy environment and a healthy economy. Gatineau (QC, Canada): ECCC. 79 p. https://www.canada.ca/content/dam/eccc/documents/pdf/climate-change/climate-plan/healthy_environment_healthy_economy_plan.pdf
- Epp E. 2000. Ontario forests and forest policy before the era of sustainable forestry. In: Euler DL, Perera AH, Thompson ID, editors. *Ecology of a managed terrestrial landscape: Patterns and processes of forest landscapes in Ontario*. Vancouver (Canada): UBC Press. p. 237-275.
- Forests Ontario. 2020. Plant a Forest and Lower Your Tax Bill. Barrie (ON, Canada): Forests Ontario. <https://forestsontario.ca/en/article/plant-a-forest-and-lower-your-tax-bill>
- Francis G. 2000. Strategic planning at the landscape level. In: Euler DL, Perera AH, Thompson ID, editors. *Ecology of a managed terrestrial landscape: Patterns and processes of forest landscapes in Ontario*. Vancouver (Canada): UBC Press. p. 295-309.
- Government of Ontario. 2023. Conservation Authorities Act, R.S.O. 1990, c. C.27. [Accessed 2023 April 28]. <https://www.ontario.ca/laws/statute/90c27>
- Intergovernmental Panel on Climate Change (IPCC). 2022. Global warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in

- the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty. Cambridge (United Kingdom): Cambridge University Press. 616 p. <https://doi.org/10.1017/9781009157940>
- Logan S, Wekerle GR. 2008. Neoliberalizing environmental governance? Land trusts, private conservation and nature on the Oak Ridges Moraine. *Geoforum*. 39(6):2097-2108. <https://doi.org/10.1016/j.geoforum.2008.08.009>
- McCarthy J. 2002. First World political ecology: Lessons from the Wise Use movement. *Environment and Planning A*. 34(7):1281-1302. <https://doi.org/10.1068/a3526>
- Ministry of Natural Resources (MNR). 2012. *A guide to stewardship planning for natural areas*. 3rd Ed. Peterborough (ON, Canada): Ministry of Natural Resources. 36 p. <https://files.ontario.ca/mnrf-stewardship-planning-natural-areas-en-2019-10-02.pdf>
- Ministry of Natural Resources (MNR). 2014. Managed Forest Tax Incentive Program. [Updated 2023 March 27; Accessed 2023 April 28]. <https://www.ontario.ca/page/managed-forest-tax-incentive-program>
- Moon K, Blackman DA, Adams VM, Colvin RM, Davila F, Evans MC, Januchowski-Hartley SR, Bennett NJ, Dickinson H, Sandbrook C, Sherren K, St. John FAV, Kerkhoff L, Wyborn C, Ellison A. 2019. Expanding the role of social science in conservation through an engagement with philosophy, methodology, and methods. *Methods in Ecology and Evolution*. 10(3):294-302. <https://doi.org/10.1111/2041-210X.13126>
- Moon K, Brewer TD, Januchowski-Hartley SR, Adams VM, Blackman DA. 2016. A guideline to improve qualitative social science publishing in ecology and conservation journals. *Ecology and Society*. 21(3):17. <https://doi.org/10.5751/ES-08663-210317>
- Municipal Property Assessment Corporation (MPAC). 2023. Managed Forest or Conservation Land. Pickering (ON, Canada): MPAC. [Accessed 2023 April 28]. <https://www.mpac.ca/en/PropertyTypes/ManagedForestorConservationLand>
- Ontario Ministry of Natural Resources (OMNR). 1993. *The timber resources of Ontario—1993*. Policy and Development and Transfer Section, Forest Policy Branch. Toronto (ON, Canada): Queen's Printer for Ontario. 67 p.
- Ontario Ministry of Natural Resources and Forestry (OMNRF). 2019. *Afforestation guide for Southern Ontario*. Toronto (ON, Canada): Queen's Printer for Ontario. 320 p.
- Ontario Woodlot Association. 2023. Managed Forest Property Assessment 101. Kemptonville (ON, Canada): Ontario Woodlot Association. [Accessed 2023 April 28] <https://www.ontariowoodlot.com/Managed-Forest-Property-Assessment-101>
- Parenti C. 2012. Why climate change will make you love big government. *The Nation*. [Accessed 2023 April 14]. <http://www.thenation.com/article/165885/why-climate-change-will-make-you-love-big-government>
- Parenti C. 2015. The 2013 *ANTIPODE* AAG lecture the environment making state: Territory, nature, and value. *Antipode*. 47(4):829-848. <https://doi.org/10.1111/anti.12134>
- Paris Agreement. 2015. United Nations. [Accessed 2022 October 20]. 25 p. https://unfccc.int/files/essential_background/convention/application/pdf/english_paris_agreement.pdf
- Perry D. 2017. Legibility Acts and Climate Adaptation Session Panel. American Association of Geographers 2017 Annual Meeting; 2017 April 5–9; Boston, Massachusetts, USA.
- Perry D. 2021. Chapter 8—Legible rivers, resilient rivers: Lessons for climate adaptation policy from the Wild and Scenic Rivers Act. In: Cassin J, Matthews JH, Gunn EL, editors. *Nature-based solutions and water security*. Amsterdam (Netherlands): Elsevier. p. 149-176. <https://doi.org/10.1016/B978-0-12-819871-1.00011-7>
- PMO (Office of the Prime Minister). 2019 December 13. *Minister of Environment and Climate Change Mandate Letter*. Rt. Hon. Justin Trudeau. [Accessed 2023 April 28]. <https://pm.gc.ca/en/mandate-letters/2019/12/13/minister-environment-and-climate-change-mandate-letter>
- PMO (Office of the Prime Minister). 2021 January 15. *Minister of Environment and Climate Change Supplementary Mandate Letter*. Rt. Hon. Justin Trudeau. [Accessed 2023 April 28]. <https://pm.gc.ca/en/mandate-letters/2021/01/15/minister-environment-and-climate-change-supplementary-mandate-letter>
- Rodríguez-Muñiz M. 2017. Cultivating consent: Nonstate leaders and the orchestration of state legibility. *American Journal of Sociology*. 123(2):385-425. <https://doi.org/10.1086/693045>
- Saldaña J. 2021. *The coding manual for qualitative researchers*. 4th Ed. London (United Kingdom): SAGE Publications Ltd. 440 p.
- Scott JC. 1998. *Seeing like a state: How certain schemes to improve the human condition have failed*. New Haven (CT, USA): Yale University Press. 464 p. <https://doi.org/10.12987/9780300128789>
- Smachylo J. 2021. Forest plantations as spatiotemporal reclamation strategy. In: Zander H, McCartney S, Solano S, Vangjeli S, editors. *A landscape approach: From local communities to territorial systems*. Novato (CA, USA): Applied Research and Design Publishing. p. 149-157.
- Strobel S, Bland D. 2000. *A Silvicultural Guide to Managing Southern Ontario Forests*. Toronto (ON, Canada): The Queens Printer. [Accessed 2023 April 28]. www.ontario.ca/page/silvicultural-guide-southern-ontario
- Winfield M. 2012. *Blue-green province: The environment and the political economy of Ontario*. Vancouver (Canada): UBC Press. 277 p. <https://doi.org/10.1111/cag.12069>
- Yin RK. 2017. *Case study research and applications: Design and methods*. 6th Ed. Thousand Oaks (CA, USA): SAGE Publications Inc. 352 p.
- Young JC, Rose DC, Mumby HS, Benitez-Capistros F, Derrick CJ, Finch T, Garcia C, Home C, Marwaha E, Morgans C, Parkinson S, Shah J, Wilson KA, Mukherjee N. 2018. A methodological guide to using and reporting on interviews in conservation science research. *Methods in Ecology and Evolution*. 9(1):10-19. <https://doi.org/10.1111/2041-210X.12828>
- Zavitz EJ. 1976. Fifty years of reforestation in Ontario. Govt Doc L&F Misc Box 16. No 2. Archives of Ontario. Peterborough (ON, Canada): Ontario Department of Lands and Forests.

ACKNOWLEDGEMENTS

This work was supported by the Social Sciences and Humanities Research Council's SSHRC Doctoral Fellowship and the Canada

Dissertation Research Fellowship at the Weatherhead Center for International Affairs. The author expresses their gratitude to those who participated in interviews and made this research possible.

Julia Smachylo (corresponding author)
Assistant Professor
Department of Plant Science and Landscape Architecture
University of Connecticut
College of Agriculture, Health and Natural Resources
Storrs, CT, USA
julia.smachylo@uconn.edu

Conflicts of Interest:

The author reported no conflicts of interest.

Résumé. Contexte: Cet article retrace l'évolution de la dynamique de gestion forestière sur les terres privées du sud de l'Ontario au Canada, selon l'angle conceptuel de la lisibilité de l'État afin de souligner la manière dont les programmes d'incitation créent de nouvelles perspectives et s'engagent dans la gestion. Plus spécifiquement, le Programme d'incitation fiscale pour les forêts gérées (PIFFG) et son corollaire, le Plan de gestion des forêts sont analysés en tant que moyen par lequel un champ de connaissances diversifié a été activé afin de permettre une gestion adaptative tenant compte du climat dans toute la région. Méthodes: Cette étude de cas utilise une approche qualitative intégrant l'analyse de documents, des entrevues semi-structurées et l'observation directe. Des modèles et des relations similaires, parmi et entre les sites, sont identifiés pour développer une théorie et clarifier le contexte socio-écologique de la gestion des forêts privées. Résultats: S'inscrivant dans l'histoire de la gestion forestière du sud de l'Ontario et de la montée en puissance de la gouvernance environnementale néolibérale, cet article apporte une contribution théorique à la recherche sur la lisibilité de l'État. Les résultats démontrent un changement dans l'intendance des terres privées par le biais d'un recalibrage de la responsabilité de gestion qui englobe différentes perspectives et développe une connaissance pratique des systèmes forestiers en fonction du lieu. Grâce à la cartographie et à la mise en place de réseaux de connaissances, diverses approches de gestion ont proliféré aux niveaux local et régional. Ces approches ont été influencées par les expériences antérieures de gestion, les différents contextes professionnels, les connaissances des participants et la motivation des propriétaires fonciers à s'engager dans une gestion active. Conclusion: Le processus d'élaboration d'un plan de gestion joue un rôle clé dans la lisibilité des situations pour toutes les parties prenantes. Le document sert également d'instrument pour l'État afin de renforcer les connaissances et les capacités des propriétaires privés et des consultants forestiers. C'est ainsi qu'une stratégie socio-écologique du paysage a été mise en place pour faire face à l'empiètement, aux espèces invasives et aux défis climatiques dans cette région qui s'urbanise de plus en plus.

Zusammenfassung. Hintergrund: In diesem Beitrag wird die sich verändernde Dynamik der Waldbewirtschaftung auf privatem Land im Süden Ontarios, Kanada, nachgezeichnet. Dabei wird das Konzept der staatlichen Lesbarkeit verwendet, um aufzuzeigen, wie Anreizprogramme neue Wege der Wahrnehmung

und des Engagements in der Waldbewirtschaftung schaffen. Insbesondere das Managed Forest Tax Incentive Program (MFTIP) und der dazugehörige Managed Forest Plan werden als Mittel untersucht, durch die ein breit gefächertes Wissensfeld aktiviert wurde, um eine klimabewusste, adaptive Bewirtschaftung in der Region zu ermöglichen. Methoden: Diese Fallstudie verwendet einen qualitativen Ansatz, der die Analyse von Dokumenten, halbstrukturierte Interviews und direkte Beobachtung umfasst. Es werden ähnliche Muster und Beziehungen innerhalb und zwischen den Standorten identifiziert, um eine Theorie zu entwickeln und den sozio-ökologischen Kontext der privaten Waldbewirtschaftung zu beleuchten. Ergebnisse: Eingebettet in die Geschichte der Waldbewirtschaftung in Südontario und den Aufstieg der neoliberalen Umweltpolitik, leistet diese Arbeit einen theoretischen Beitrag zur Forschung über die Lesbarkeit des Staates. Die Ergebnisse veranschaulichen einen Wandel in der Verantwortung für die Bewirtschaftung privater Wälder durch eine Neuordnung der Bewirtschaftungsverantwortung, die verschiedene Perspektiven einbezieht und ortsbezogenes praktisches Wissen über Waldsysteme aufbaut. Durch die Kartierung und den Aufbau von Wissensnetzwerken haben sich verschiedene Bewirtschaftungsansätze auf lokaler und regionaler Ebene ausgebreitet. Diese Ansätze wurden durch frühere Bewirtschaftungserfahrungen, unterschiedliche berufliche Hintergründe, das Wissen der Teilnehmer und die Motivation der Landeigentümer, sich für eine aktive Bewirtschaftung einzusetzen, beeinflusst. Schlussfolgerung: Der Prozess der Entwicklung eines Bewirtschaftungsplans spielt eine Schlüsselrolle dabei, Landschaften für alle Beteiligten lesbar zu machen. Das Dokument dient auch als Instrument des Staates, um das Wissen und die Fähigkeiten von privaten Landbesitzern und Forstberatern aufzubauen. Damit wurde eine sozio-ökologische Landschaftsstrategie auf den Weg gebracht, die sich mit der Ausbreitung, den invasiven Arten und den klimatischen Herausforderungen in dieser zunehmend urbanisierten Region befasst.

Resumen. Antecedentes: Este artículo rastrea la dinámica cambiante de la gestión forestal en tierras de propiedad privada en el sur de Ontario, Canadá, utilizando la lente conceptual de la legibilidad estatal para destacar cómo los programas de incentivos están creando nuevas formas de ver y participar en la administración. Específicamente, se investiga el Programa de Incentivos Fiscales para Bosques Manejados (MFTIP, por sus siglas en inglés) y su correspondiente Plan de Bosques Manejados como un medio a través del cual se ha activado un campo diversificado de conocimiento para permitir una administración adaptativa consciente del clima en toda la región. Métodos: Este estudio de caso utiliza un enfoque cualitativo, incorporando análisis documental, entrevistas semiestructuradas y observación directa. Se identifican patrones y relaciones similares dentro y entre sitios para construir la teoría y arrojar luz sobre el contexto socio-ecológico de la gestión forestal privada. Resultados: Situado en la historia de la gestión forestal del sur de Ontario y el auge de la gobernanza ambiental neoliberal, este artículo contribuye teóricamente a la investigación sobre la legibilidad del Estado. Los resultados ilustran un cambio en la administración de las tierras privadas a través de una reampliación de la responsabilidad de gestión que abarca diferentes perspectivas y construye un conocimiento práctico basado en el lugar de los sistemas forestales. Mediante la cartografía y la creación de redes de conocimientos,

han proliferado diversos enfoques de la gestión a nivel local y regional. Estos enfoques han sido influenciados por la experiencia previa en gestión, los diferentes antecedentes profesionales, el conocimiento de los participantes y la motivación de los propietarios de tierras para participar en la administración activa. Conclusión: El proceso de elaboración de un plan de gestión desempeña un papel clave en la comprensión de los paisajes para

todas las partes interesadas. El documento también sirve como un instrumento del Estado para desarrollar el conocimiento y la capacidad de los propietarios privados y los consultores forestales. Esto ha puesto en marcha una estrategia de paisaje socio-ecológico para abordar la invasión, las especies invasoras y los desafíos climáticos en esta región cada vez más urbanizada.

Appendix.

Interview Questions: Managed Forest Plan Approvers***Context and History***

1. How many years have you been involved with the MFTIP program?
2. If you have knowledge of the history of this program, would you be able to talk about its development?

Program Requirements

3. What is the timeline of the program? When do different requirements typically occur and who are the actors involved?
4. In your experience, which MFTIP forest stewardship practices are addressed in management plans? Which the least? Why do you think this is the case?
5. Have the forest stewardship activities within this program changed over your time as an approver?

Format of Reporting

6. What information is required by the province for MFTIP? Why do you think this format and method of collecting information was chosen? Is this format effective?
7. How is knowledge of foresters and landowners combined in these plans?
8. How does knowledge filter up to the province?
9. Is the reporting timeline of 10 years adequate for this program?

Actors Involved

10. What is the main demographic participating in the program?
11. How does the role of different actors and their approach to forest management objectives influence the resulting landscape?
12. How are landowners involved in decision-making? How often do landowners stick to their plans/ how often do they deviate?

Program Management

13. At what institutional level is this program primarily managed?
14. Are there other policies and programs that can be combined with MFTIP?

Outcomes

15. In your experience, are there certain areas that have been more successful than others in regard to the amount of land in MFTIP? Why is/is this not the case? How is the regional landscape changing under this program (socially, economically, and ecologically)?
16. What are the positive and negative outcomes of this program? Have there been unintended consequences/ challenges?
17. How does this approach to forest conservation differ from other approaches?

Concluding Questions

18. Overall thoughts on the program. Is there additional information that you think would be useful for this study?

Interview Questions: Landowners

1. How long have you been participating in the MFTIP?
2. Why are you participating in the program?
3. What management goals are being addressed through your forest management plan?
4. What is involved in managing your land?

5. How has your management plan been translated to the landscape? What techniques are used?
6. How has your knowledge of the property and management values been integrated into your management plan?
7. What times of the year are busiest for you regarding forest management?
8. How have your goals for forest management on your property changed over your time in the program?
9. What are the main challenges you have encountered?
10. What are some of the aspects of your forested land that make it unique?
11. Are there development pressures? How do the lands surrounding your property affect the decisions you make?
12. Overall thoughts on the program.

Interview Questions: Conservation Authorities

1. What pressures are impacting forests in southern Ontario? Are there specific issues experienced by private landowners?
2. How has forest conservation on private land in Ontario changed over the last 50 years? Have the roles and responsibilities of private landowners and government changed or remained the same?
3. What is the role of your organization in regard to private land forest conservation? How does this interface with the role of the province and of municipalities?
4. When did environmental incentive strategies begin to appear in forest management in Ontario?
5. How have private land conservation programs such as MFTIP and CLTIP impacted forested land as well as management practices in southern Ontario?
6. How does incentivized forest stewardship differ or complement other approaches taken by a municipality or the province?
7. Who generally is participating in incentivized conservation? Why do you think this is the case?
8. Can more than one management program exist on a property? Which? And in what ways can they be combined?
9. In your opinion, is the tax incentive offered by the provincial government enough to compensate landowners?
10. Are forested lands in southern Ontario experiencing pressures associated with climate change? Is there the potential for incentivized conservation to play a role in addressing this?
11. Is there additional information that you think would be useful for this study that hasn't been covered in this interview?

Interview Questions: Program Administrators/Affiliates

1. What pressures are impacting forests in southern Ontario? Are there specific issues experienced by private landowners?
2. What is the role of the province regarding private forest conservation? How does this interface with the role of municipalities and NGOs?
3. How is the province involved in incentive programs such as MFTIP and CLTIP?
4. What is the origin of the management activities promoted under MFTIP?
5. How have private land conservation programs such as MFTIP and CLTIP impacted forested land as well as management practices on private land in southern Ontario?
6. What do you see as the main differences between MFTIP and earlier provincial programs?
7. To what extent is the province tracking MFTIP and CLTIP in terms of the types of management and program uptake? Have you seen certain patterns in the region?
8. Who generally is participating in incentivized conservation?
9. In your opinion, is the tax incentive enough to compensate landowners?
10. Is there additional information that you think would be useful for this study that hasn't been covered in this interview?