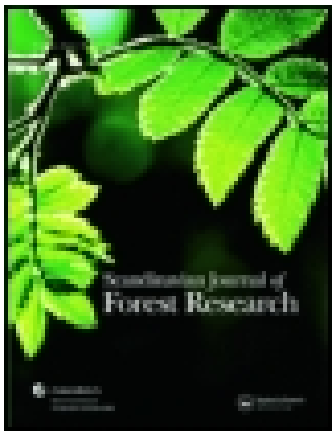

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Forest owner is more than her goal: a qualitative typology of Lithuanian owners

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RESEARCH ARTICLE

Forest owner is more than her goal: a qualitative typology of Lithuanian owners

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Abstract In contrast to quantitative surveys up to date, this study employs in-depth interviews and qualitative analyses aiming to provide detailed contextualized portrayals of private forest owners (PFO) in Lithuania, where forest ownership underwent crucial changes in the last two decades. We scrutinized narrations of 18 owners, focusing on the background and goals of forest possession, actually applied management practices and informants' future plans. Content analysis of the narrations revealed three classes of goals: ideational rationale, i.e. immaterial justification for owning and managing forest; financial goals referring to monetary benefits from selling forest products; and own material use for household needs. Reported practices differ widely among PFO, ranging from largely absent management to intensive silvicultural regimes. Syntheses of each informant's goals and practices enabled discerning four PFO types. Forest Businessmen typically own largest estates (>100 ha) and regard forest as an investment to get long-term financial benefits; they resort to forest management for timber and often intend to enlarge their possessions. Household Foresters primarily use timber for own needs, regularly applying selective tree cutting; such forestry results in frequent but small-scale management interventions. Passive Forest Lovers aspire to recreational or environmental values, being largely uninterested in timber harvesting. Ad Hoc Owners usually are small-scale, have vague goals and rarely engage in forest management. The study concludes with discussing policy implications of the identified diversity of PFO.

Key Words: Private forestry; Forest policy; Owner goals; Management practices..

Introduction

Forests in Lithuania cover one third of the country's total area. Private forest property was banned during the Soviet rule (1940-1941 and 1944-1990), however, the process of restitution has commenced after regaining Independence in 1990. Today, around a half of the forestland is managed by state forest enterprises, while the share of private forests was increasing over the two last decades and reached 39% (State Forest Service 2013). Around one tenth of the forest area remains unmanaged, while the process of restitution is continuing. State and private forests somewhat differ in species composition and average stand characteristics (Table 1), but the biggest distinction lies in the profile of their owners or managers. All state forests are managed by professional foresters with the key aim of sustainable timber production (Brukas & Weber 2009) following conventional practices regulated in forest management plans (Brukas et al. 2011).

Private forest owners (PFO) amount to 247 thousand (State Forest Service 2014), exhibiting high diversity in terms of their goals (Mizaraitė 2001). PFO are often considered as "profit-driven forest destroyers" by the media (Laučius 2011; Jaskelevičius 2011; Vingrienė 2014) and handled by state authorities with strict regulation and control (Stanislovaitis et al. 2011). Management of private forests is thought to be inferior (Mizaras et al. 2006; Brukas et al. 2011; Ministry of Environment 2013), while proper extension services are lacking (Stanislovaitis et al. 2011).

<Table 1 here>

The cumbersome process of restitution led to fragmented forest ownership, a private forest estate averaging 3.3 ha. Even 72% of forest holdings are smaller than 3 ha and only 1.6% are larger than 20 ha (Ministry of Environment 2012). 67% of forest holdings are owned by a single owner, the remaining one third belonging to two or more owners (Mizaras et al. 2006). Roughly 40% of private forest owners are female (Ministry of Environment 2013) and estimated 65% PFO reside in urban areas. The distance from the place of residence to forest holding averages 29 km (Mizaras et al. 2006). Almost half (48% in 2013) of private forest holdings were inherited or received as compensation for other real estate during the restitution. The remaining half has been purchased from other owners. A recent survey (Ministry of Environment 2013) has shown that many PFO see forest as a long-term investment and are willing to pass the holding over to the future generations. The most important management priority is supply of wood for own household needs, followed by timber harvesting for sale. The most active owners are those who manage more than 20 ha of forest. In most cases (80%), such owners have an approved forest management plan that is required if forest owner wishes to conduct a final felling (Brukas & Sallnäs 2012).

After a long period of absence, the private forest ownership in Lithuania is at a stage of early development and so is the research regarding private forestry. A number of studies (Mizaraitė 2001; Pivoriūnas & Lazdinis 2004; Lazdinis et al. 2005; Mizaraitė & Mizaras 2005; Stanislovaitis et al. 2011; Ministry of Environment 2013) addressed the underlying problems of private forestry that could be summarised into following main points: (1) there is no strategy giving a clear direction for development of private forestry; (2) heavy bureaucratic load in relation to forestry activities; (3) lack of knowledge and experience in forest

management by PFO; (iv) private forest estates are fragmented and policy incentives for consolidation are lacking; (v) cooperation of private forest owners is weak and not genuinely promoted. Only a few dozens of PFO are members of forest owner cooperatives. Several of the aforementioned studies (Mizaraitė 2001-2010; Pivoriūnas & Lazdinis 2004; Mizaraitė & Mizaras 2005a-2005b; Ministry of Environment 2013) built upon statistical owner surveys and provide a fairly good picture of the general characteristics of private forestry. However, there are no deeper, contextualized studies of PFO, e.g. looking at owners' perceptions in the context of their personal situation and specific forest characteristics.

According to Dhubhain et al. (2007), private forest management is a voluntary action with few legal constraints; however east European post-socialist countries form an exception, imposing a strong regulation of private forestry. The demand for in-depth analyses of PFO goals, behaviour, needs and management activities is increasing in the context of rapid political and socio-economic changes. Our study aims to increase an understanding of private forestry in Lithuania trough a qualitative analysis of PFO goals and management activities and to discuss policy implications of the revealed owner profiles. Before proceeding to materials and methods, we will provide a short excursus on qualitative analysis. Such section is deemed to be relevant as application of qualitative methods is highly unusual in PFO research of the former socialist countries.

Excursus on Qualitative Analysis

Countries with a long tradition of private forestry (e.g. Finland, France, Germany Sweden, USA) have numerous studies analysing owners' personal identities and their influence on forest management activities. A bulk of PFO studies, including elaborations of forest owner typologies by their management goals, is conducted with support of surveys using traditional statistical (quantitative) techniques, for recent examples see (Häggqvist et al. 2014; Lidestav & Lejon 2012). Traditional survey approach is attractive for several reasons (Bliss & Martin 1989), including, inter alia, the possibility to provide statistically valid generalisations about sampled populations, replicate the tests and validate conclusions. A wealth of

analytical tools are available, and the survey approach enjoys a high degree of acceptance by the scientific community. But quantitative approach also has serious limitations. Probably most importantly, quantitative methods do not allow for a rich, contextualized insights into the issues investigated. This is indeed a point of concern for such less tangible variables as owners' values, beliefs and motivations, in case the research aims to understand deep underlying reasons behind respondents' behaviour. Another limitation is the contingency of answers to the structure of questionnaire and formulation of questions. For example, Mizaraitė (2001) and Pivoriūnas (2004) used quantitative surveys to investigate forest management goals of Lithuanian PFO, leading to quite different findings. Mizaraitė (2001) found that, overall, supply of wood for own household needs is the most important forest benefit. In contrast, the survey by Pivoriūnas (2004) revealed primary importance of the aesthetic forest value. Such distinct results are most likely pre-defined by different structures of questionnaires, e.g. the question on wood supply for household needs was missing in the study by Pivoriūnas (2004).

Qualitative methods of course have their limitations, such as overwhelming amount of data, subjectivity inherent to their interpretation and limited possibilities to generalise findings. On the other hand, limitations of quantitative approaches turn into strengths of qualitative research (Bliss & Martin 1989; Kardelis 1997; Elliot 2005). Qualitative methods enable collecting "rich" material about the informant enabling a truly inductive research, when hypotheses do not need to be predetermined. They allow explaining phenomena that are difficult to measure and model quantitatively. Hugosson and Ingemarson (2004) and Bengston et al. (2011) contend that qualitative methods enable very specific and individual insights into respondents' reasoning that would be impossible using traditional surveys. Also fruitful combinations of quantitative and qualitative approaches are possible. For example, one could conduct a qualitative investigation looking closer at sample of owners who, according to their responses to a quantitative survey, mark timber as primary importance, but do not actively manage their forest for obtaining timber.

Despite a widespread use elsewhere, applications of qualitative methods is relatively scarce in studying PFO. Hugosson and Ingemarson (2004) consider (Kurtz & Lewis 1981; Blis & Martin 1989) in the USA and

(Lönnstedt & Törnqvist 1990; Lönnstedt 1997) in Sweden to be amongst the most important qualitative studies during 1980s and 1990s. Since then the applications have been on rise, not least in Scandinavia (Hujala et al. 2007; Hujala & Tikkanen 2008; Hokajärvi et al. 2009; Hujala et al. 2009; Urquhart et al. 2010; Bengston et al. 2011; Lähdesmäki & Matilainen 2014). These studies applied qualitative methods to depict PFO goals, motivations, problems, and practices of forest management. According to the authors, such information is not only helpful for creating PFO typologies and behavioural models, but could be also instrumental for improving policies regarding private forestry.

Materials and Methods

Case Study Areas

The research was carried out in two case study areas (CSAs): "Žemaitija" in the western part of Lithuania, covering 380 km^2 and "Suvalkija" in the southern part, covering 660 km^2 (Figure 1). These areas substantially differ in natural conditions, forest ownership structure, and spatial forest distribution. Forests cover 35% and 60% of respective CSA. Žemaitija CSA is characterised by dominance (60%) of private forests that are mainly scattered as small plots over the hilly agricultural landscapes on relatively poor soils. CSA includes many protected areas with ensuing restrictions on forest management. CSA Suvalkija is, in contrast, dominated by state forests (over 80%) managed by Kazlų Rūda State Training Forest Enterprise. Relatively flat terrain, compact spatial allocation, homogenous stands and small share of protected areas constitute good preconditions for timber production-oriented forestry.

<Figure 1 here>

Data Collection

The empirical material was gathered by qualitative in-depth interviews carried out in autumn 2012. An interview guide was used to structure the conversations aiming to reveal PFO attitudes, goals and practices

in owning and managing the forest and other relevant features. The interviews were predominantly open-ended, enabling the informant to develop their own narratives of owning the forest.

Overall eighteen PFO were interviewed. The owners were selected striving to maximise the owner diversity mostly in terms of estate size, but also taking into account other PFO and estate characteristics, like owner's current occupation and the age of forest stands. The only strict precondition was that PFO had (some of) their forest on CSA. On the Žemaitija CSA we gave priority to PFO who had recently carried out afforestation of unused agricultural land, as afforestation and resulting land use changes was one of targeted topics of investigation. The first contacts in both CSAs were mediated by the local inspectors of the State Forest Service; subsequent informants were selected using snowball sampling (Goodman 1961).

The first author of this study conducted all the interviews, with the second author taking part in eight of them. All interviews were carried out in person, ranging from 1.5 to 6 hours in length. Researchers visited forests of six owners (the time of visit to forest is not included in aforementioned interview time), helping to conceive owners' narrations even better. Most interviews were digitally recorded having the informants' permission and typed notes were made during conversation. All interviews were conducted in Lithuanian. Researcher team selectively transcribed materials that were relevant to the subject of this study. The quotes used in this article were translated to English.

Data Analysis

Interview data were qualitatively analysed, scrutinizing every individual informant. The analysis was structured around certain focal themes including: identified goals of forest possession, the way estate was acquired, the importance of various forest products and services, goals of forest management, actually applied management practices, and plans for the future. Then we discerned differences and generalities among the informants by noting patterns, making contrasts or comparisons and subsuming particulars into the general (Miles 1994). The method of building a logical chain of evidence was applied as proposed by

Miles (1994) with inclusion of direct citations to emphasize informants' ideas in a particular context. We started with looking at owners' demographic features and characteristics of owned forest plots then continued with scrutinizing their goals. After having identified certain classes of PFO goals we were looking at how these classes relate to the specific forest management practices by each individual informant. Then the cumulative scrutiny of owner and property characteristics; the goal orientations and the actual practices constituted a rich qualitative picture of each informant, enabling to discern certain owner types. To facilitate readability, the size of the owned forest in hectares was used as an informant's code.

Subsequent to the identification of owner types, we estimated their distribution on the Žemaitija CSA, with help of a map-based expert evaluation in autumn 2013. We have thoroughly described key features of each owner type and asked local professional foresters to ascribe each forest plot to a particular PFO type on a forest estate map. Eight experts took part in the assessment: three inspectors of the State Forest Service and five officers from the Telšiai State Forest Enterprise (two district chief foresters, district deputy forester, forest ranger and forest officer from central administration). They provided information that covered 88% of the area of private CSA forests. A GIS database was created to calculate forest areas managed by certain type of PFO. The plots without any ascription by the expert informants were assigned to ad hoc PFO type.

Results

Interviewed Forest Owners

Out of 18 PFO, 11 were interviewed in CSA Žemaitija (Žem.) and seven in CSA Suvalkija (Suv.). Informants represent high diversity in terms of forest holding size, demographic and forest estate characteristics (Table 2). 83% of informants were male, their age averaged 54 years, ranging from 34 to 86. More than half of interviewed PFO had a degree in higher education, four informants had forestry education. Likewise four informants had professional experience of working in forestry.

<Table 2 here>

The size of estates ranges from 1 to more than 3000 ha. By Lithuanian scale with average holding size amounting 3.3 ha, the sample included three large PFO having forest parcels all over Lithuania and intending to buy up more forestland for further expansion. The largest holding belongs to several real estate companies financed by private funds, but all their forests are managed by a private company whose head was interviewed. The number of forest parcels possessed by smaller PFO varies a lot. Some small-scale owners have a small forest plot in one place, others' forest are scattered over 2-7 locations (Table 3). Only two PFO own forest on the place of residence. Eight PFO have the nearest forest lot relatively close, within 2-10 km from the place of residence. Some estates are 20, 60 or even 300 km away.

Informants possess their forest properties for 1-22 years, 13 years in average, and the ones having forest for longer time usually got it through the process of restitution. Eleven PFO acquired their possessions in this way. Two of the informants inherited their properties, while five bought it, three of them being the largest PFO among the informants. Owners having several plots usually procured them in several ways. In general, the first forest holdings were attained through restitution, later some PFO expanded their forest property by buying more forest or afforesting unused agricultural land.

The informants' forests are diverse in many aspects. The dominant share (circa 80%) have the formal status of commercial forests (so-called group IV), i.e. are primarily aimed for timber production with least management restrictions. Around 17% are protective forests (III group) implying prolonged rotation ages and additional cutting time constraints; and just a few of informants' estates belong to protected forests (group II) with severe management restrictions, including prohibition of clear felling. Most of the holdings contain mixed and uneven aged stands. Twelve of the informants have some land recently afforested, nine of them used EU subsidies. 16 out of 18 informants have some young stands (<10 years) due to afforestation or regeneration. Another common feature is storm damages incurred during the years of possession.

<Table 3 here>

Owner's Goals

Goals versus Estate Characteristics

Size and other characteristics of the owned forest predetermine management options and thus inevitably influence owner's goals. For example, the owner of 1 ha recently regenerated forest has modest short-term forest management options, i.e. carrying out pre–commercial thinning or leaving forest untended. While owners of the biggest holdings have a whole range of options, from regeneration over thinnings to final fellings of various types and extents. When addressing owner's goals we did not specify a time frame. Thus the owner could express her/his wilful intention for any benefits from forest, influenced by but not necessarily being strictly bound to the present state of the forest. Therefore, the owner's goals reflect the feasible management space shaped by realistic forest management options, but also one's internal fabric of values, interests and long-term intentions. When qualitatively analysing the complexity of multiple intentions, three main types of goal orientation emerged, namely: (1) ideational rationale, (2) financial goals, and (3) material use for own purposes (Table 4).

<Table 4 here>

Ideational Rationale

Ideational rationale reflects owner's ethical foundations for owning and managing forest. Owning forest often rests on immaterial feelings and values: forest is regarded as a *"sentiment"* (5 ha), *"spiritual value"* (22 ha), *"a rest for soul"* (36 ha). Small and average size PFO are more sentimental, seeing forest as spiritual and environmental treasure that creates value not only to the owner, but also to the nation and future generations or for the nature's self.

Just the fact of owning forest is regarded important: *"Forest is a creation that accumulates value itself […] forest is valuable […] everybody knows it here in Kazlų Rūda, that it is important and valued"* (1.8 ha), "*Forest is a nice form of real estate for me"* (5 ha). Sentiments, love and certain respect for forest are evident: *„Forest is not money for me, it is a nice way of spending time, sentiment: my forest, my trees"* (5

ha), "*forest is for human, for nature, for [keeping it to] future generations, […] their well-being, it is morality and our true home"* (22 ha), *"Forest is in the soul of Lithuanian; I like being in forest, problems move away, I love forest"* (36 ha),*"In order to make something good for Lithuania [making afforestation]"* (55 ha).

The long term nature of forestry and forest as a heritage to the heirs are named on multiple occasions: *"I will not use it, it is not for me, future generations will use it"* (1.5 ha), *"I want to show to my grandchildren how to grow forest the right way, keeping it for future generations is important"* (22 ha), *"We grow forest for children"* (22' ha), it is important *"to leave the holding for heirs"* (36 ha), "*that next generations take over"* (250 ha), *"that my son also manages it well"* (1000 ha). The 5 ha owner is planning to sell his holding soon, as his children are not showing any interest in possessing and taking care of the forest.

Financial Goals

Some of the owners clearly express financial interests. Bigger owners regard forest as a good financial investment and they are indeed making an investment, having bought some or most of their forest land: *"We look to the far future [in afforestation and forest procurement], it is a good investment"* (22' ha), *"[Bought the forest] thinking of the future, so you buy bread [refers to future incomes]"* (40' ha), *"Had money and no idea where to put it, started buying up forests, because they were for a very low price, anyway, that is a real estate investment"* (1000 ha). Only the largest ones have intensions to expand their forest possessions. While most of the smaller PFO received their holdings in the process of restitution or inherited it and do not show interest in buying more forest.

Pursuing income from forest management is also strongly linked with the size of forest holding. Only larger PFO regard incomes as one of the top priorities: *"[Management] for economic benefits, for money"* (40 ha), *"Business, turnover"* (250 ha), *"Firstly, economic benefits"* (3000 ha). Many small PFO regard profits

rather unimportant: *"Economics? Not on such [small] area"* (1 ha), *"For sure not getting profits"* (13 ha), *"Economics is not the priority […] too small area for active management"* (22 ha).

Own Material Use

Regarding the own use, wood is the most important forest product. The use of wood is influenced by the size of the holding. The smallest PFO mostly use it for own needs, the largest PFO mostly sell and medium owners combine these two options. Getting timber and fuel wood for household needs is important to many informants: *"Getting fuel wood"* (1.5; 1.8; 3; 40' ha), *"Get fuel wood, we do not buy it, only from own forest"* (9.5 ha), *"Only fuel wood for own needs by sanitary cuttings, if I have no time, I give it to neighbour; the pine stand [clear felled] all went for house building"* (13 ha), *"Timber and fuel wood for own needs and a little for sale"* (17 ha), *"Mostly fuel wood for own and neighbours needs and some timber too"* (36 ha).

As for non-timber products, the owners name mushrooms, berries, herbs and game: *"Mushrooms, berries and firewood to cook mushrooms"* (1 ha), *"Non wood products are, of course, important, […] but can't be predicted, if there is no [in own forest], we can go to other forest […] - we pick berries, mushrooms, herbs"* (1.8 ha), *"I used to collect mushrooms and wild strawberries"* (13 ha), *"Collecting mushrooms and berries, maybe some game keeping in the future, clearly not for business, but for own survival"* (40' ha). These are more important to small and medium PFO, who live on the forest holding or nearby. The largest PFO do not show any interest in such non-timber uses. Only a few smaller owners give high priority for recreation: *"Forest as park, for recreation, walking"* (1 ha), *"Forest visiting, walking, wildlife watching"* (5 ha).

Forest Management Practices

Being forestry graduates, four of the informants have all the needed theoretical background necessary to carry out a "conventional" forest management. The three biggest owners have substantial practical

experience, and much of their skill was learned by doing, making mistakes and improving: *"[Forest management practice] changed a lot, the first forests I clear–felled, I did not have understanding, …now, before cutting, I walk around looking what to leave…, in thinning, previously, it looked like we had left enough of trees, but it was too little and storm blew it down, now we are doing thinning very carefully in some four times"* (1000 ha). Some informants (1.8, 9.5, 22, 22', 40' and 55 ha) have relatives or friends who are foresters and help them by advising how to carry out forest management: *"A friendly forester from the state forest enterprise helps me, because he likes it [my forest]"* (40' ha), *"I have friends foresters and always consult them"* (22 ha). Still, a few owners have very little idea about forestry and forest management. For example, despite having a friend forester who helped her in afforestation, the 22' ha owner was surprised to hear about the importance of pre-commercial thinning. She also admitted: *"actually, I do not even know the borders of my forest holdings"*. 55 ha non-typical owner who has his estate 300 km away is not managing the forest himself and has vague plans for the future. He is in a good cooperation with a local forester who takes care of the estate, the owner himself is not even visiting the holding often. *"Probably we should do cleaning cuttings and final felling, that are calculated in the forest management plan, but my hands can't reach that far, [NAME of the local forester] takes care, he is a very honest man, I trust him, he has my warrant for doing all the works and management, except, of course, selling of the estate"*. This informant can be named "the duty owner" as he assumes that owning forest brings him more duties and troubles than benefits. *"That forest was bought by my grandfather, in restitution my father got it back, before dying he said that only one of his four children should take it over. As no one wanted, I had to. I am taking care, but we split [minor] profits. At the time my oldest brother did not want the forest, we offered, now he wants it. There has been an illegal felling in the best stand [mature, valuable pine], I think, he "contributed", now we argue [about owning forest]."*

The mid-size owners often carry out forest management operations themselves, treating their forests each year to get some fuel wood or timber, also periodically visiting the plot(s) to inspect and walk around. 36 ha owner enjoys working and being in forest, he claims that it is also better from economical point of view: *"forest is not unprofitable; just there is no balance as the higher share [of profit] does not go to the owner;*

if you work yourself then it is profitable, if you hire, then not". 13 ha owner said he was doing all the forest management by himself: *"everything I cut, I did it by myself, even the wood extraction in the final felling I did myself with own tractor"*. 40 ha owner is a professional forestry contractor, who has all the equipment, consequently is carrying out all the operations in own forest. While 1.5 ha owner has a combined approach: *"contractor did the felling […], I have a chainsaw, my neighbour has a small tractor, so we cooperate when preparing fuel wood"*. Others are also doing some works themselves: *"everything from final felling to soil preparation was done by the contractor, I regenerated by sowing, now do weeding and some pre–commercial thinning"* (1.8 ha). Retired teacher, who has 6 ha afforested, hired the state forest enterprise to prepare the soil, but did the planting and tending herself or with the help of family members.

Unsurprisingly, the 3 large-scale owners hire contractors to carry out all the forest management activities. These PFO are managing forest in a similar way as state forest enterprises, doing *"full scale forest management"* (3000 ha), while some smaller owners (55, 22', 1 ha), in sharp contrast, are managing extensively or not for the wood products. A few PFO (36, 13 or 3 ha) claim to have their own model of forest management. In general, the biggest difference is in the extent and frequency of forest management activities, as many small-scale PFO manage forest for keeping it in good shape rather than for exploiting.

The final felling is by far the most important treatment in terms of income to the owner, yet the interviews revealed significant differences in owners' propensity to carry out such felling as well as their preferences to the felling type (clear versus non-clear final felling). A few of smaller PFO, who had some mature stands, chose to harvest it at once, while others are in favour of selective cutting. There are also owners who are not very interested in harvesting timber and prefer to keep the forest standing even when allowed to cut: *"I cut some trees each year, but no clear felling"* (3 ha), *"If I do not need timber I will not clear fell, even if it is already mature"* (13 ha), *"We have no interest in clear felling"* (22' ha), *"I do not plan any large cuttings, only maintenance without clear felling"* (36 ha), *"We did not do any final felling, maybe we should in the future…"* (55 ha).

On the other hand, the larger forest owners declare that final felling is the operation that drives their business and gives profit: *"Final felling is profitable, thinning is for the future"* (40 ha), *"60% of activity in my forest is final felling, I do not buy forest with final felling restrictions"* (250 ha). The 1000 ha owner points out that felling decision relates to markets: *"I do not cut when prices are low, I wait for prices to increase"* (1000 ha). Some PFO regard final felling as a harvest of crop that should be done: *"The forest was mature, so I cut it down in several times"* (1.5 ha), *"I bought it [forest] knowing it is mature and allowed to cut, forest grows without watering, but you need to cut it in time too"* (1.8 ha), *"As a forester, I think that crop in forest must be harvested, it is mature now, so it should be felled soon without losing timber quality"* (5 ha).

Owner Types

Despite the revealed uniqueness of each forest owner, patterns of goal orientations (Table 4) and prevalent approaches to forest management allow discerning the following groupings or types among the interviewed PFO: Forest Businessmen, Household Foresters, Passive Forest Lovers, and Ad Hoc Owners (Table 5).

<Table 5 here>

Forest Businessmen are the most easily discernible owner type, typically owning the largest forest estates. Forest Businessmen regard forest as investment and often intend to enlarge their possessions. The main goal is profitability and efficiency; consequently they intensively manage forest and clear fell stands as soon as they reach the minimum allowable rotation age. Among our informants forestry businessmen were 3000 ha, 1000 ha, 250 ha and 40 ha owners.

The 1000 ha owner is a typical Forest Businessman. While developing his agricultural farm that is now managed by his son, he had the interest and persistence in trying different businesses, until he found success in forestry: *"I went bankrupt three times: steel trade, agricultural machinery maintenance…, but survived and started again, in 1995 started buying forests […], two years later sold my old business [continued with agriculture and forestry only]".* Firstly, forest for him is a long term investment. The investment gives good

revenues, so there is an intension for further expansion. The owner is also concerned about passing the work for future generations. Forest management is rather intensive and responsive to the market situation. Other forest products and services are considered unimportant from financial perspective, thus not targeted in forest management. Notably, the owner is active in local politics as a member of town council and one of political parties. He also has strong views about regulation of private forestry in Lithuania and criticizes inspectors, who control and penalize PFO. He claims that their judgement is biased, treating PFO unfair, though complying with the legal acts: *"The inspector has a hat and a uniform, but does he have more brain than the owner?"* He also complains about forest policy at large: "*[It] should be clearer and shorter, why to bother owner's head, more freedom for the owner, there is stupidity in taxes…"* State forest enterprises get some critics as well: *"They spoil biofuel markets with their low prices, that is a gold mine for stokers [refers to heating plants], wood of small dimensions is hard to record, money go to the "side". They pay little to the budget when managing the biggest share of forests; they should try to earn money like me, private forest owner"*. He is also annoyed by some smaller PFO, or *"fuel wood collectors"*, as he names them, by their misuse of timber, when big dimension, quality timber *"is passed through the chimney"*, not supplying the wood industry.

Notably, another Forest Businessman, the 250 ha owner, does not share the 1000 ha owner's views on excessive restrictions and is rather concerned about the present extent of forest utilization and its effect on future forest policy: *"more restrictions on cutting might be imposed: forest area is increasing, but the average age is decreasing, because all the mature stands are felled, the age is decreasing very fast in my forests"*.

Household Foresters are mostly interested in getting wood for own needs. Forests are managed in medium intensity using selective tree cutting and rarely clear felling. Compared to businessmen, householders are more sentimental, valuing forest for its spiritual and emotional benefits. They often like working in the forest themselves. Forest management is multipurpose and more individualised, combining timber production, non-wood products, recreation and environmental protection. Notably, householders'

management regimes would often allow maintaining continuous forest cover. Most of the informants were household foresters: 1.5 ha, 3 ha, 9.5 ha, 13 ha, 17 ha, 36 ha and 40' ha.

13 ha owner could be taken as a representative example. He has his forest around the inherited household, and says: *"I grew up in the surrounding pine forest"* that is now treated with certain respect and consideration: "*I inherited the forest and manage it in a way, that I think is best, not seeking financial benefits, […] just managing it leisurely doing what needs to be done*". He is not interested in getting profit by selling wood, but forest is still an important resource, providing fuel wood and construction timber for own needs. Consequently he is not intending to cut his mature forests, if there is no need for wood, though managing forest to ensure its good state is important. Other forest products and services are important, but not primary: *"I pick boletus, then sow its rests under the forest litter, as my grandfather taught me, I do nesting-boxes and leave hollow trees for birds, reserve some dead wood to decay and enhance tree species"* The owner has a good understanding of forest management and carries out all the operations by himself. Forest is managed frequently, by sanitary cuttings of low intensity, taking out single trees or conducting small-scale felling. As a forester, he criticizes state forest managers: *"most PFO manage forest as I do, just sanitary cuttings and else, what is needed, that is all the management [extensive], I think state forest enterprises manage too intensively, especially thinning intensity is too high, […] only protected areas are untouched, commercial forests [IV group] are thinned down to gardens, I do not understand such heavy thinning".* He also declares having own concept of forest management: *"firstly, it is my professional knowledge and experience, but there should be also space for creativity and trying some new things…"*

Passive Forest Lovers manage their forest at low intensity. They do not intend to cut their forest. Emphasis is either on environmental and recreational values, or on keeping forest for future generations and thus forwarding financial benefits to the future. There were 4 passive forest lovers among our informants: 1 ha, 22 ha, 22' ha and 55 ha owners.

The smallest 1 ha owner in our sample is a typical nature lover. She refuses economic benefits and felling of forest: *"Wood is a product of secondary importance, the state of forest is important, that forest was nicely looking and without pest damage".* Applied forest management activities are just for ensuring good sanitary condition and improving aesthetical value of the forest as the aim is to have it as a park to walk around picking mushrooms and berries. *"That forest belonged to my grandfather, then to mother, we were glad having it, loved and cherished it very much, but storm came on July 6, 2008 and destroyed it completely. That was very pity, there was a forest and I used to pick mushrooms there, then I come and there is no forest anymore."* She also expressed concern about forest cutting in the region: *"forests disappeared in the last 10 years, looks like after a war, […] just some [stripes] left by the roads, I think they are cruelly cut, I regret it",* yet she emphasizes this is only her personal opinion: *"Maybe these forests had to be cut, I don't know, I have no competence, but as there is no information, I think forests are cut too much".*

Ad hoc Owners are usually small-scale. Forest management is rare and not intensive. Silvicultural measures are applied when having an opportunity of substantial income (clear felling) or when legally required (sanitary cuttings or regeneration). Ad hoc owners either have a very small forest area, or are vague about their goals of forest management. Compared with other owner types, Ad hoc Owners are more likely to sell the forest land or standing timber. Three informants were identified as Ad Hoc Owners: 1.8 ha, 4.1 ha and 5 ha.

Five ha owner is a good example of an ad hoc owner. Though he is a forestry researcher, he does not need timber for own use and does not express clear goals with regard to owning and managing forest. Just some sanitary cuttings were carried out when needed, later forest just stayed unmanaged. *"My forest management was rather passive, close to natural development, there were neither big sanitary cuttings, nor thinning, as the stocking was not very high, there was no need, […] I do not need fuel wood, never intended to cut, always thought that will cut when it grows up".* After the forest became mature and allowed to cut, owner simply is deciding to sell the forest, as his children do not regard the forest as a value: *"it is mature already,*

so forest crop needs to be harvested, […] it is time to sell, I will do it in the near future, I see my children don't need it".

Discussion

Our study is based on rich qualitative material from a small sample of PFO. Such approach does not allow statistical inference to a larger population, e.g. for providing estimates of shares of different owner types on a national scale. The strength of the study lays in a thorough scrutiny of informants' perceptions, yielding nuanced portrayals of PFO. Open-ended conversations enabled an in-depth reflection on the reasons and context for owning forest and taking certain management decisions. Explicit linking of owner's goals and management activities constitutes a special contribution to PFO literature, where such linking is largely missing (Dhubhain et al. 2007; Novais & Canadas 2010).

It is up to the analyst to interpret the obtained qualitative data, i.e. analysis heavily rests on the interpretative capacity of the involved researcher(s). Quantitative surveys, in contrast, oblige the respondent to pick the statements according to his momentary discrimination of a structured questionnaire. A respondent is burdened to interpret the decontextualized categories preconceived by the surveyor, which leads to additional data noise. In our view, the problem of such double hermeneutic is often overlooked in connection with quantitative surveys, thus exaggerating their "objectivity" and predictive capacity.

Probably the most important finding of our study is huge diversity of private forest owners in every relevant facet, including, *inter alia*, their values, goals, skills and approaches to management. This strongly diverges from a widespread view that PFO in Lithuania are a crowd of unskilled novices eager to maximise short-term profits and thus "devastate" forests as much as allowed by the legal framework or even beyond its limits (Vingrienė 2013). Instead of such destructive intentions we find that most PFO are either (1) proud to own forest viewing it as a long-term asset cherished for its material or immaterial qualities; or (2) rather indifferent with a weak sense of ownership and lacking ambition for active forest management.

Besides the presumably sparse type of nature–dedicated Passive Forest Lovers (Table 5), the sociological PFO landscape consists of three types of forest owners: the profit-oriented Forest Businessmen, the Household Foresters focusing on own material use, and the relatively indifferent Ad Hoc Owners that, for the most part, leave their forest unmanaged. In their approaches to forest management, Forest Businessmen most closely resemble management of state forests. They focus on timber production and quite neatly follow the paradigm underlying current silvicultural prescriptions. Forest Businessmen clear fell forest as soon as they reach the minimum allowable rotation ages and normally conduct proper forest regeneration, just the tending of young forests is inferior compared with State forest enterprises. Household Foresters often have their own forest management conceptions. Therefore, the prescribed silvicultural programmes only poorly fit to their "householding forestry" with frequent small-scale take out of trees, primarily for own fuel wood consumption. Ad Hoc Owners fit the "official" silvicultural programmes even worse, largely neglecting the tending of young stands and intermediate forest use in form of thinnings.

Viewed in the context of previous studies, an important implication of our findings is that the current regulation of private forestry has a poor fit with the reality. In the regional North European comparison Lithuanian forestry is regulated by rather stiff legislation (Brukas et al. 2013) enforced by rigid control (Stanislovaitis et al. 2011) aiming to implement the "management for volume" paradigm (Brukas & Weber 2009). In reality, only Forest Businessmen largely follow the paradigm. They would very likely manage their forest even more intensively if given more decision freedom, e.g. by introducing cutting target diameters supplementing or replacing the current inflexible minimum rotation ages. Current regulatory framework has rather limited effect on the remaining, small-scale PFO. The diversity of private forest management is and will remain remarkable, in line with the highly diverse goal orientations and management approaches among the owners.

Our policy recommendation is that PFO should get more freedom in managing forests to meet their goals. One might fear that liberalization would be harmful and that forests would be overexploited. But that is not

in interest of most owners as none of interviewed PFO wish to harm or destroy their property. Even the profit-oriented businessmen emphasize the importance of sustainable forestry and sustained long-term incomes. Liberalised legislation would intensify management of businessmen's forests, with little effect on other PFO. However, all owner types would benefit from reduced bureaucracy and increased trust between state and private forest sectors.

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Figure 1. Case study areas.

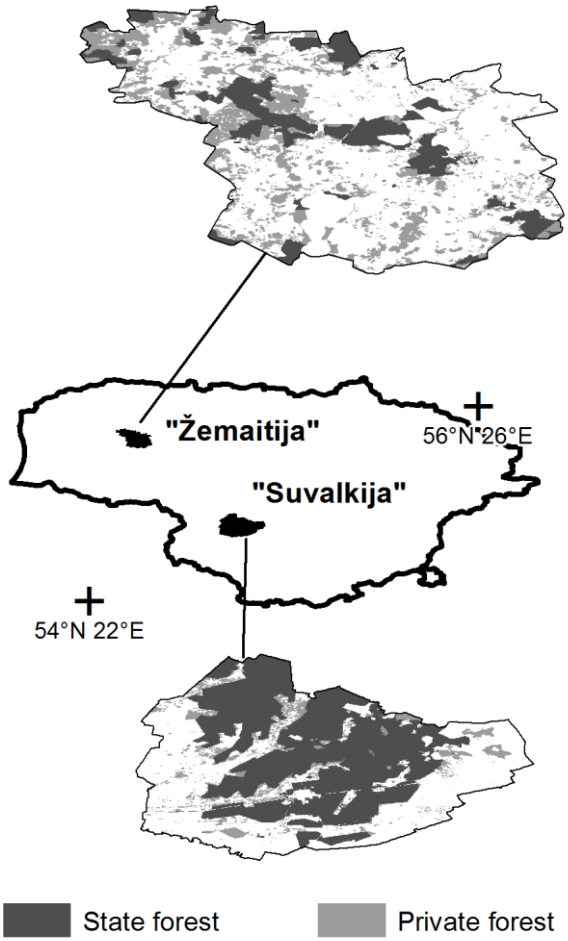

Table 1. Lithuanian forests by ownership type.

Characteristics	State forests	Private forests	Forests reserved for restitution
Area, 1000ha	1078	853	243
Area, %	50	39	11
Average growing stock, m^3/ha	248	244	228
Mean annual volume increment, m^3/ha	8.0	9.0	9.0
Annual felling volume*, m^3/ha	3.5	3.8	-
Average stand age, years	56	51	47
Distribution of dominant tree species, % of area:			
Conifers	59	44	36
Noble broadleaves	3	4	3
Other broadleaves	38	52	61

*Note: Merchantable round wood

Source: State Forest Service 2013

Table 2. Demographic characteristics of interviewed PFO.

Size, ha	CSA	Gender	Age	Short description (education, profession, present activity and other relevant information)
1	Žem.	F	44	Higher education in zoo engineering. Municipal officer and stock- raising farmer.
1.5	Suv.	M	86	Higher education in forestry. Retired after 44 years of forester's work.
1.8	Suv.	M	48	University degree in mechanic engineering. Head of transport department in private company. Father, father in law and uncle are foresters.
3	Žem.	M	55	Vocational education in grinding, now works as a mechanic.
4.1	Žem.	M	46	University degree in economics. Works as an economist.
5	Suv.	M	56	University degree in forestry engineering. Doctor of sciences, university teacher and researcher.
9.5	Žem.	F	75	University degree in education. Presently retiree and small-scale farmer. Husband is retired forester.
13	Suv.	M	51	University degree in veterinary and forestry. Works in forestry and wood industry since 1991, now is a manager in international wood processing company.
17	Žem.	M	71	Vocational mechanic's education. Presently stock-raising farmer.
22	Suv.	M	60	Unfinished higher education in building engineering. Craftsman, has 42 ha of ecological farming.
22'	Žem.	F	54	Has university degree in accountancy. Accountant, was considering to become forester.
36	Žem.	M	53	University degree in pedagogics. Works as a state clerk in the regional administration.
40	Žem.	M	36	University degree in agronomy. Works as a forestry contractor.
40'	Suv.	M	36	University degree in sport coaching. Presently businessman in electricity trade.
55	Žem.	M	66	Doctoral degree in chemistry. Retired scientist. Friend forester manages his forest.
250	Žem.	M	34	Secondary education. Forest businessman, started in 2006.
1000	Žem.	M	62	Unfinished higher education in mechanics. Forest businessman, farmer and local politician.
3000	Suv.	M	38	University degree in forestry. Head of private company managing forests of nine companies in real estate investments

Table 3. Characteristics of forest holdings.

Size, ha	No of plots	Distance to the nearest plot, km	Owning time, years	Procurement	Forest characteristics
1.0	1	2	21	Restituted	Regenerated young forest. It was 70 years old mixed pine forest with spruce, birch, and aspen when storm blew it down in 2008.
1.5	1	4	18	Restituted	Had a mature low quality pine stand with spruce, birch and 0.5 ha swamp. Cut it down in 3 phases and regenerated.
1.8	1	20	10	Bought from aunt	0.6 ha of 14 years old pine. 1.2 ha pine stand with spruce and birch cut in 2010, regenerated with pine. 0.2 ha of peat land.
3.0	2	6	15	Restituted	1 ha is 70 years old mixed spruce forest. The other 2 ha plot is 60 years old, dominated by birch, black alder and some aspen.
4.1	1	5	1	Inherited	Agricultural land afforested a year ago with 50/50 birch and spruce.
5.0	1	<60	20	Bought from state	Mature pine mixed with spruce, birch and black alder. Forest fire 30 years ago resulted in dense spruce understorey now. Forest group III.
9.5	2	3; 4	15	Restituted & bought	4 ha of maturing mixed spruce-deciduous forest on wetland, single mature trees, lots of dead wood, need for cleaning. 5.5 ha of agricultural land afforested 5 years ago with spruce/birch/pine 40/40/20.
13	1	0	15	Restituted	Forest immediate to curtilage. Composition: 2.1 ha of boggy 10 years old black alder in need for thinning, 6.4 ha of mature pine stand, of which 1.5 ha were cut, 0.8 ha of 40 years old spruce, 1 and 2.7 ha of pine, 60 and 45 years old respectively. All forests of forest group III. Owns 4 ha of bog, which is protected area, also Natura 2000 territory.
17	3	5	12	Restituted & bought	5 ha on two plots afforested 4 years ago. 12 ha of older forest on 2 sites dominated by conifers with some birch and aspen.
22	4	0; 7; 200	22 15 12	Restituted & bought Restituted	7 ha afforested, presently it is15 years old birch. 2 ha of mature pine forest. 4 ha of 50 years old mixed coniferous-deciduous forest. 9 ha of willow plantations. 9 ha of 110 years old mixed coniferous–deciduous forest of forest group II.
22’	7	12	10	Restituted, inherited & bought	5 ha and 8 ha afforested with oak respectively 2 and 3 years ago. 1.3 ha of 60 years old birch with patchy regeneration after storm. 1 ha of 30 years old pine forest, 5.6 ha of 50 years old forest 70 km away. Plus 2.5 ha 30 km away.
36	6	<20	11	Restituted, inherited & bought	Forest on hilly terrain, very diverse, multi-aged, naturally afforested, many species, dominated by birch and spruce, 1.3 ha is afforested 8 years ago. Takes care of 14 ha of relative’s forest.
40	4	4	12	Restituted (to father)	10 ha afforested with pine, spruce, birch and black alder 6–8 years ago, 30 ha of older mixed coniferous–deciduous forest, mostly young stands, some 40–50 years old, very few mature. 1.5 ha of forest group II, all the rest of III.
40’	1	50	2	Bought & expanded	12 ha afforested 2 y. ago. Respectively 5, 3 and 2 ha of 25, 80 and 100 years old pine, else is 20 years old spruce and sparse old growth oaks with shrubs. Forest group III.
55	1	300	20	Inherited	20 ha of forest dominated by 60-70 years old spruce. 2 ha of regenerated illegal felling 15 years ago. 27 ha afforested 6 years ago mostly with oak, spruce, some black alder and pine. The rest is bogs, shrubs and natural afforestation.
250	lots	>50; max 200	6	1st inherited, rest bought	Size of plots: 1.3–14 ha, in average 4-5 ha, mostly located in neighbouring municipalities. Diverse forests, mostly maturing and young (bought and cut), few (3-4 ha) in protected areas or with forest management restrictions.
1000	lots	All over country	17	Bought up	Buys everywhere, the only criterion is good road access. Various forests, on average, middle aged and maturing. Forest groups: IV/III/II respectively 80/10/10.
3000	lots	All over country	15	Bought up	Owns, buys and manages all kind of forest no matter location, tree species, or age. Forest groups: II around 3%, III around 15-20%, the rest IV. Forest management for other companies by contract.

Table 4. Owner's goals.

Size, ha	Ideational rationale	Financial goals	Own material use
1	*"Forest as a park, purely for nature and recreation"*. Loved and cherished.	Not prominent	Mushrooms, berries and firewood to cook it
1.5	*"Forest for next generations"*. Attentive regeneration and tending to have nice future forest.	Timber for sale instantaneously	Firewood continuously
1.8	Produce timber and fuel wood, clear fell in time.	Timber for sale instantaneously	Firewood instantaneously
3	*"Take care and let forest flourish".* Forest as a park, keep it nice and tidy for others to see and to be proud of..	Not prominent	Firewood continuously
4.1	Afforestation of unused agricultural land.	Afforestation subsidies	Not prominent
5	*"Forest to visit, walk around, take care, and watch it changing"*, nice free time and sentiment.	Profits in the future. Now *"surely not making money of it."*	Not prominent
9.5	*"Forest as a nice piece of nature"*, sentiment, but also responsibility to take care of it.	Afforestation subsidies	Construction wood and firewood continuously
13	*"Definitely not profits. Carrying out all the works according to forest management requirements, keep it in good shape as it was."*	Not prominent	Construction wood and firewood continuously
17	Forest is not business. Leaving some timber in the forest "*for nature*".	Add hoc small amounts of wood for sale. Afforestation subsidies.	Construction wood and firewood continuously
22	*"Mother nature is the most important"*. Spiritual benefits, keeping forest for heirs, showing them how to grow it right way.	Not prominent in forest. Biofuel for sale in the future from willow plantations	Firewood continuously
22'	Not planning to cut now, forest for heirs and to have clean environment.	Investment. Afforestation subsidies, profits in the future.	Not prominent
36	Loves forest a lot, likes spending time, relaxing there, keeping forest in good shape to leave it for heirs, *"not making a park of it, but it must be in order"*.	Small amounts of wood for sale continuously. *"Good investment, forest grows, adds value".*	Construction wood and firewood continuously
40	Forest management for biodiversity, landscape values, at the same time aiming for financial benefits.	Wood for sale. *"Getting long term economic benefits from the property. EU financial support"*.	Not prominent
40'	"*Trig it up, settle in [the estate] at present and then manage [forest] to have it nice and profitable in the future"*. Forest is liked form of recreation.	Small amounts of wood for sale continuously, afforestation subsidies. *"Forest as an investment, guarantee for future, source of income".*	Construction wood, firewood and other forest goods continuously
55	*"The will of my ancestors and me is that it [forest] brought benefits for Lithuania."*	Not prominent. *"Maybe we will have some benefits [financial] in the future"*.	Not prominent
250	*"Passing to the next generation."*	*"Making good business and turnover, started to get money, good investment"*. Wood for sale continuously	Not prominent
1000	*"Forest is a national treasure, must be valued and well-kept, managed properly, so it was productive and gave benefit"*. Wood must be used wisely to get best of it, so every wood product was profitable and usable.	Investment. Wood for sale continuously	Not prominent
3000	A balance, firstly, economic benefits, then, sustaining or increasing forest value, managing properly.	*"Long term investment to have long term incomes from it"*. Wood for sale continuously	Not prominent

Table 5. Profiles of owner types.

Owner type	Primary goal orientation	Forest management profile	Share, %*
Forest Businessman	Financial	Intensive management with full range of forestry activities carried out by contractors, emphasis on timber production, major income from final clear fellings.	18
Household Forester	Own material use	Management of medium intensity, frequent takeout of single trees or small scale final felling. Formation of patchy, uneven aged forest with diversified flow of timber and non-timber forest products and services.	56
Passive Forest Lover	Sentimental	Forest either left unmanaged or managed with low intensity, in order to ensure good sanitary conditions and good shape of forest, either cleaning and tending forest for recreation or enhancing biodiversity.	7
Ad Hoc Owner	Not clearly defined	Forest management is not intensive and rare, seizing rare opportunities to conduct final felling or carrying out legally required measures (sanitary cuttings or regeneration).	19

*Note: Shares of respective forest area managed by each PFO type are based on estimates of local district foresters and forestry inspectors in Žemaitija CSA.