



Protecting or destructing? Local perceptions of environmental consideration in Lithuanian forestry



Vilis Brukas^a, Andrius Stanislovaitis^{b,*}, Marius Kavaliauskas^b, Algis Gaižutis^c

^a Southern Swedish Forest Research Centre, Swedish University of Agricultural Sciences, Sundsvägen 3, Alnarp, SE-230 53, Sweden

^b Institute of Forest Management and Wood Science, Aleksandras Stulginskis University, Studentų str. 13, Akademija, LT-53361 Kaunas, Lithuania

^c Vilnius University, Marketing department, Saulėtekio str. 9, LT-10222 Vilnius, Lithuania

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ABSTRACT

Environmental consideration is an important facet of modern forestry. However, its perceptions by those who own and manage the forest are seldom investigated. After reviewing the evolution of pertinent legislative requirements, this study scrutinizes the attitudes towards environmental consideration, based on qualitative interviews of Lithuanian private forest owners (PFOs), state forest managers, forest management planners and other local forest stakeholders. We find a considerable increase of environmental consideration since 1990, with emphasis on forestland zoning at landscape level. Most of the interviewed forest managers and PFOs are aware of and compliant with the legal demands, however, their judgement of environmental consideration appears to be strongly affected by the degree of the faced restrictions. Informants who manage forest areas with a high share of non-commercial forest zones assess the current restrictions as excessive.

Though the Lithuanian forestland zoning overall can be seen as a successful example of implementing multiple use forestry at landscape level, deep qualitative interviews expose several critical issues. Hastily performed zoning entails many mistakes, where the forest or landscape characteristics do not match the intended purpose. Even more critically, severe forest management restrictions around the nests of rare birds lead to widespread destructions of nests in private forests. The most important recommendations of our study are: (i) introducing a fair system of compensations for the economic losses inflicted on PFOs; and (ii) gradual rezoning of forestland, with radically improved consideration of local specifics, including on site assessments and genuine involvement of the local stakeholders.

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1. Introduction

In line with changing societal preferences, the environmental consideration has been increasing in forestry in most of the developed world (McNeely, 1994). This has naturally caused conflicts between the traditional utilitarian and environmental interests, e.g. as expressed through the ideological clashes between the defenders of forest owners' rights (e.g. DeLong, 1997) and the advocates of weightier public interference (e.g. Ehrlich and Ehrlich, 1996). Science cannot answer what is the "proper" level of environmental consideration to "optimally" balance the involved values and interests. Science can however assist decision-making by providing better understanding of the involved socio-ecological systems,

e.g. by exposing the perceptions of forest owners and managers whose attitudes, knowledge and skills are critical in implementing the measures of nature conservation (Pretty and Smith, 2004).

The latter strand of research is represented by a rather substantial number of survey studies that, inter alia, dissect attitudes by forest owners' demographic characteristics (Uliczka et al., 2004), scrutinise the reasons behind environmental conflicts as perceived by forest owners (Bergseng and Vatn, 2009); or compare attitudes by forest owners versus the general public (e.g. Bliss et al., 1997) and nature resource professionals (Fischer, 2006; Kindstrand et al., 2008; Fielding et al., 2012). The policy messages of such studies vary, but better environmental forestry extension, genuine involvement of local stakeholders including private forest owners (PFOs) in environmental conservation, and increased reliance on voluntary rather than regulatory instruments are recurring recommendations.

The aforementioned studies pertain to the old democracies. Environmental consideration in forestry is however of high impor-

* Corresponding author.

E-mail addresses: vilis.brukas@slu.se (V. Brukas), stanislovaitisa@gmail.com (A. Stanislovaitis), marius.kavaliauskas@asu.lt (M. Kavaliauskas), algis.gaizutis@ef.vu.lt (A. Gaižutis).

tance for the ex-socialist Eastern European countries that, after the collapse of the Warsaw block entered the path of market economy. The transition brought fears for environmental destruction and forest degradation in Eastern Europe (Balkyte and Peleckis, 2010; Bouriaud, 2005) as societal priorities for economic growth could have led to relaxed environmental requirements. Yet, in reality we have been witnessing increasing concern for environment as these countries were signing international conventions and “importing” the Western values and lifestyles. The countries do share the socialist heritage of adhering to strong hierarchies and severe regulatory measures both in forestry (Bouriaud et al., 2013) and in environmental conservation (Klůvanková–Oravská et al., 2009). They need to cope with reformatory pressures in the state forestry (Lazdinis et al., 2009) and most of them have reintroduced private forest ownership (Siry, 2003).

Despite the pending problems, studies on attitudes towards environmental consideration in the Eastern European forestry are scarce. A notable exception is (Lazdinis et al., 2007) that examined the state forest managers’ perceptions of measures to increase forest biodiversity in Lithuania. Lazdinis et al. (2007) took an increased environmental consideration as an axiomatic virtue, testing the hypothesis ‘that policy objectives in the field of biodiversity conservation and the related instruments are not well understood by those in charge of direct management of forest resources.’ The authors concluded that the managers are aware of the need to conserve forest biodiversity, but lack understanding of the biodiversity concept and of the rationale of the newly introduced measures, such as biodiversity trees or Natura 2000 sites.

Our study explores local forestry stakeholders’ perceptions about environmental consideration in Lithuania. In contrast to (Lazdinis et al., 2007), we do not predefine the environmental consideration as an axiom that needs to be “properly understood” by the local actors. Instead we regard it as inevitable outcome of the national policy-making process (macro level) while its actual implementation (e.g. through changed forest management practices) is largely resting on managers of state forests, PFOs, forest management planners and other stakeholders at the micro level. We accordingly focus on forest actors’ perceptions of implementing the environmental consideration, hypothesising that restrictive regulatory measures are of limited acceptability by the local stakeholders and hence can lead to unintended or undesired outcomes. The study is carried out in two major analytical steps. First, we analyse legal acts to expose the development of environmental consideration in Lithuanian forestry since 1990. Second, we scrutinise forest actors’ perceptions and behaviour, based on qualitative interviews of PFOs, state forest managers and other stakeholders.

2. Materials and methods

2.1. Case country

Located in North-Eastern Europe, Lithuania has forest cover of 2.2 million ha corresponding to one third of the country’s territory. After the break from the Soviet Union in 1990, central planning system was replaced by market economy and the process of forest restitution commenced. By 2013, the share of private forests was 39% with the number of PFOs reaching 247,000 and estate averaging 3.3 ha in size (Ministry of Environment, 2000–2013). State forests are managed by 42 state forest enterprises (SFEs) coordinated by Directorate General of State Forests under the Ministry of Environment. SFEs average 23,600 ha in size of forest area, they are self-financing management entities carrying out full-scale forest management including forest protection, regeneration, felling and timber sale (Kavaliauskas and Činga, 2011). The State Forest Service is controlling both PFOs and state forest managers in terms of

forest management, including environmental consideration. Local inspectors of the State Forest Service issue permissions for forest management activities and control whether legal requirements are followed.

At the local level, the study focused on two case study areas (CSA): “Žemaitija” in the western part of Lithuania, covering 380 km² and “Suvalkija” in the southern part, covering 660 km². CSA Žemaitija is dominated by private forests (60%) scattered over the hilly agricultural landscapes also being mostly covered by the territory of regional park with ensuing restrictions on forest management. CSA Suvalkija, conversely has relatively flat terrain, compact spatial allocation with small share of protected areas and dominance (over 80%) of state forests.

2.2. Analysis of legal acts

The retrospective overview of legal acts concentrates on the most important requirements concerning environmental consideration in forestry. Particular attention is given to (i) *the system of forest groups* that is a salient European example of forestland zoning at landscape level framing management requirements for each forest stand (Brukas et al., 2013); and (ii) *protected zones around the nests (PZN) of rare birds species* exemplifying a specific environmental measure at a smaller (forest stand) scale. All legal acts were accessed via the official website of Seimas (Parliament) of the Republic of Lithuania (www.lrs.lt), their analysis being structured with the aim to reveal the main decennial changes over the period of independence.

2.3. Stakeholder interviews

Empirical material via qualitative in-depth interviews was gathered on two occasions. First, 10 planners preparing forest management plans for PFOs all over Lithuania were interviewed in autumn 2010 (Brukas and Sallnäs, 2012). While the interviews focused on the issues and routines in preparing forest management plans, the environmental consideration emerged as a highly important issue. This is the reason why an ornithologist was interviewed among three other informants in addition to forest planners (Table 1).

Second, 58 interviews with PFOs, state forest managers, and other forest stakeholders were conducted autumn 2012 on the aforementioned CSAs (Table 1). Informants were selected using snowball sampling (Goodman, 1961), striving for diversity and wide representation of interests in relation to forestry. Varying in length from one to six hours, interviews were conducted in person by the authors and recorded having informants’ permission while also taking typed notes. The semi-structured interviews investigated key drivers and barriers behind forest management, involving sections on environmental consideration in forestry. Forest planners, PFOs and state forest managers first were given opportunity to freely describe their working routines, estate characteristics, approaches to planning and forest management as well as the key issues encountered. This enabled to get a first screening of informants’ perception of environmental consideration within their daily practices, without superimposing certain perspectives or focal issues. The interviews then engaged into deeper discussion of selected facets of environmental consideration, including, but not limited to, forestland zoning (forest groups) and PZN.

During the subsequent analysis, relevant materials were selected and translated into English. All cited informants were grouped and coded according to their occupation (Table A1 in Appendix A). PFOs were classified according to the types by Stanislovaitis et al. (2015): Forest Businessmen, Household Foresters, Passive Forest Lovers, and Ad Hoc Owners. For informants from the two local CSAs the first letter of the code represents CSA

Table 1
Overview of qualitative interviews used in this study.

Surveyed stakeholders (informants' code)	No of informants	General profile of sampled informants
Private forest owners (O)	18	PFOs of diverse profile, the estate size ranging from 1 to 3000 ha
State forest managers (M)	12	Local district foresters and headquarter officers at Kazlų Rūda and Telšiai state forest enterprises
Forest management planners (P)	10	Experienced forest planners (working experience 5–43 years)
Other forest stakeholders (S)	31	Actors with a stake in forest management at the local level
From these:		
–Forestry authorities	2	Local inspectors of State Forest Service
–Forestry contractors	6	Contractors for various forest management activities
–Wood processing companies	7	Sawmills, glued construction, carpentry, furniture, bioenergy comp.
–Representatives of protected areas	2	Regional park in Žemaitija CSA
–Local governance or control authorities	7	Municipal (upper local level) and eldership (lowest level) administration, environmental authorities, EU support administration
–National level policy stakeholders	2	Forest owner association and Forestry Department
–Other (interviewed in 2012)	2	Representative of local community and Retired forester
–Other (interviewed in 2010)	3	Ornithologist, Representative from State Forest Management Institute and Initiator of forestland zoning
Total	71	

they come from: Z stands for Žemaitija, S for Suvalkija. Focusing the analysis around the certain topics, we were building a logical chain of evidence (Miles and Huberman, 1994, pp. 245–261) around the focal issues. After identifying perceptions by different stakeholder groups we strived to provide a representative account of the different opinions, using numerous quotations. In other words, we made a conscious effort to put the narrative back into the lips of the actors.

3. Results

3.1. Environmental legislation in forestry

3.1.1. Legal framework

Before Lithuania adopted its' own Forest Act in 1994, forestry was regulated by the Soviet Forest Code from 1979. During the Soviet period (1944–1990), the scope of forest utilisation was determined by the central planning system. The Ministry of Forestry of the Soviet Republic of Lithuania supervised forestry activities, whereas hunting and environment protection were subordinated to the Nature Protection Committee under the Council of Ministers. At the time, three larger protected territories and 89 smaller preserves were established (Karazija, 2003, p. 161). All forests were under the state control and divided into two groups: Group I, protected forests; Group II, commercial forests. In 1983, 38.5% out of total forest area (1.48 million ha) were assigned to Group I (Ministry of Forestry and Industry, 1986). Such a big share of non-commercial forests may create an impression of heavy environmental restrictions. In fact, severe restrictions, comparable to today's regimes in strict reserves (current forest group I) as well as protected and recreational forests (current group II) applied to around 6% of the forest area only (Brukas et al., 2009).

The number of protected areas (PAs) considerably increased soon after regaining independence in 1990: four national parks (NPs) and one nature reserve were established in 1991 (Supreme Council of the Republic of Lithuania, 1991). Additionally, 30 regional parks and 128 nature reserves were set up one year later (Supreme Council of the Republic of Lithuania, 1992). The Law on Protected Areas came into force in 1993, introducing the system of PAs. Some areas were later assigned a protection status, but not included in the system of PAs. Thus, though not a part of PAs, buffer zones around water bodies or strict reserves and the protection zones around nests (PZN) of rare bird species bring substantial additional restrictions.

PZN were initiated in 1999 by the rules of Final Felling defining that nests of rare birds must be protected by prohibiting final felling and restricting other cuttings from April 1 to September

1 in circular plots with radius from 50 to 200 m, depending on the bird species (Government of the Republic of Lithuania (GRL, 1999). Although formal registration procedure was lacking the zones were registered while preparing forest management plans. In principle, every stakeholder must report on detection of endangered species (including discovery of rare bird's nest) to controlling authorities (Seimas of the Republic of Lithuania, 2009). In practice, such nests are mostly identified systematically during forest inventory by forest planners, or on ad hoc basis by other interested stakeholders (ornithologists, foresters, inspectors, PFOs, etc.). Interestingly, there was no procedure for abolishing a PZN. As soon as Lithuania entered the European Union in 2004, the directives 79/409/EEC and 92/43/EEC came into force giving an even stronger emphasis on bird protection, however still not providing for a compensation mechanism for restrictions in PZN. In 2010, Lithuanian government (GRL) approved rules introducing obligatory notifications and monetary compensations to owners for newly established zones concerning the listed strictly protected species and habitats (GRL, 2010a). However, none of the bird species enumerated in Felling Rules were included in the list. Since 2010, all data regarding protected species and habitats, including PZN, must be recorded in open access database SRIS (Ministry of Environment, 2009). In 2013, rules for SRIS database determined procedure of establishment, revision and abolition of PZN (Ministry of Environment, 2013). Application to establish or to abolish PZN is filled in online and might be submitted by anyone. Provided information is locally verified by environmental institutions or a professional ornithologist and reported to the Ministry of Environment. The final decision to establish or to abolish PZN is made by commission including representatives from the Ministry of Environment, State Forest Service, State Service for Protected Areas, Directions of PAs, institutions of science, non-governmental organisations and PFOs.

Irrespective of whether a particular forest stand belongs to a PA, it is also assigned to a so-called forest group determining forestry regime depending on prioritised forest function. Forest groups were introduced in 1994 (Seimas of the Republic of Lithuania, 1994). The actual zoning was accomplished in 1995 (GRL, 1995) by Lithuanian Forest Inventory and Management Institute in collaboration with other authorities relying on documents of territorial planning and PA regulations. Certain management regime applies to each forest group: Group I (1.2% of the total forest area) – unmanaged strict reserves left for natural development; Group II (12.3%) – ecosystem protection and recreational forests, no clear cuts allowed, minimum allowable rotation age close to natural tree mortality age; Group III (15.2%) – protective forests aiming to form productive forest stands with emphasis on protection of soil and water, having reduced size of clear cut areas and prolonged minimum allow-

Table 2
Environmental consideration in Lithuanian forestry in 1990–2014.

Decade	Protected areas (PAs) and forest groups	Protected zones around nests (PZN)	Other environmental stipulations affecting forestry
1990–1999	Expansion of PAs: 4 NPs (86,000 ha) in 1991; 30 regional parks and 128 nature reserves (458,000 ha) in 1992; 94 municipal reserves (approx. 150,000 ha) in 1997. Totally 970,000 ha of PAs (14.9% of country's area), 600,000 ha of forests under environmental restrictions (30.3% of the total forest area). ^a	In 1999, number of species by radius of protection zone: 50 m: 3 100 m: 9 200 m: 3	Clear cut area ≤ 6 ha in Group III; Clear cut area ≤ 10 ha in Group IV; 3–7 retaining trees per ha of clearcut. In PZN, final fellings prohibited, other cuttings restricted Apr 1–Sep 1.
2000–2009	In 2007, area of PAs amounts 998,000 ha (15.3% of country's area). 670,000 ha of forests under environmental restrictions (31.2% of the total forest area). Area by forest groups: I: 25,700 ha II: 184,600 ha III: 160,200 ha IV: 296,700 ha. ^c	In 2004, number of species by radius of protection zone: 50 m: 3 100 m: 6 150 m: 5 200 m: 3 In 2002, 533 PZN in state forests.	Clear cut area ≤ 5 ha in group III; Clear cut area ≤ 8 ha in group IV; >7 retaining trees per ha of clearcut. In addition to previous: Fellings prohibited in Groups II and III within PAs and all forests in NPs Mar 1–Jul 1. In 2001, woodland key habitats (WKH) are launched. In 2008, 8900 WKH cover 26,600 ha. ^b
2010- up to date	In 2013, area of PAs totals 1,023,500 ha (15.7% of country's area). 710,000 ha of forests under environmental restrictions (32.8% of the total forest area). Area by forest groups: I: 26,100 ha II: 198,400 ha III: 177,400 ha IV: 305,600 ha. ^c	In 2010, number of species by radius of protection zone: 50 m: 4 100 m: 6 150 m: 4 200 m: 5 In 2013, 1711 PZN in state forests.	Retaining trees: ≥3 living and ≥3 dead if felling area is <1 ha; ≥7 living and ≥2 dead per ha if felling area is above 1 ha. In Groups II and III within PAs and all forests in NPs final fellings prohibited Mar 1–Aug 1, thinnings May 1–Jul 1, pre-commercial thinnings Apr 1–Jun 1.

Sources: Ministry of Environment (2000–2013), Karazija (2003, pp. 161–169) and GRL (1999, 2010c).

^a No data available by forest groups.

^b WKH are not included in PA coverage.

^c Including forests in PAs.

able rotation ages; Group IV (71.3%) – commercial forests, mainly managed to ensure stable wood supply. During the restitution, the forthcoming PFOs had no possibility to dispute the superimposed management regimes. The assignment of groups is decided at governmental level (GRL, 2010b) and a single owner has no practical possibility to change the forest group.

3.1.2. Changes of legal requirements

Table 2 provides overview of decennial changes in laws, focusing on PAs, forest groups and PZN.

Since 1990, environmental consideration was strengthened in both qualitative and quantitative terms. Compared to the end of Soviet period, the area of PAs increased by 71%. The official statistics is inconsistent with regard to forest groups: 20% of Group IV forests belong to PAs with severe management restrictions (e.g. NATURA 2000 sites), but officially declared as commercial forests. The same problem is observed in woodland key habitat (WKH) areas in state forests that have no official status of PA but amount to 27,000 ha (Ministry of Environment, 2000–2013), practically banning any forestry activities. Since 2004, the area of PZN increased more than threefold in state forests, while for private forests the statistics is absent.

Several restrictions were added also in commercial forests without a special protection status, e.g. seasonal limitations for harvesting were introduced in 2000s and increased in 2010s. Biodiversity-related forestry restrictions augmented in extent and complexity. For example, the requirement to leave from 3 to 7 biodiversity trees per hectare in final felling areas was introduced in 1999. In 2001, it was extended to leaving not less than 7 single trees (or trees in groups) older than the average stand age. In 2010, biodiversity requirements were specified according to the size of final felling area also specifying the amount of dead trees to be retained (Table 2).

3.2. Stakeholder perceptions

3.2.1. Overall perception of environmental consideration

Many of interviewed small-size PFOs were passive forest lovers (Stanislovaitis et al., 2015) and many other forest stakeholders are strongly nature-oriented, thinking that forests are overcut: “Now forests are cut more, there should be stricter regulation with penalties” (ZO11), “At the first sight, it seems that forests are cruelly cut, (...) if you ask the local people who see many trucks loaded with timber each day, they would say that no forest will be left soon” (SS11), “Forests are cut too much (...), the tree and the forest are beautiful and nice just by their existence” (ZO15). The opinions of informants with lesser knowledge in forestry often appear to be based on gut feeling or emotions (“I am not competent, but think forests are cut too much” (ZO10)), influenced by general public perceptions and media: “All the forests will soon go through the chimney, the media is showing [that]” (SS3), “Society does not get accurate information, there have been several very awry reports on one broadcast” (ZS7). Even though forest cuttings in Lithuania are far below the annual increment (Brukas et al., 2015), harvesting has roughly doubled compared to the Soviet period, which is an “objective” contribution to the impression of intensive forest exploitation as noted by the head of forest district: “Now we are in an active stage of forestry, large areas [of unused land] are afforested, there is a big demand for wood, we cut a lot” (SM3). It concerns some professional foresters as well: “It is a pity to cut nice forest, but we have to, because [forest management] plan obliges, if I was a private owner, I would not cut it” (ZM5). Based on sentiments, such statements depict the general conflict between state foresters’ self-perceptions as caring forest stewards versus the need to cut forest to secure the income base: “Timber is our main source of income” (ZM4), “We need profit, we have a cutting norm [to fulfil]” (ZM1). In line with this, informants refer to science-based estimates of adequate forest utilisation: “According to the statistics, we could cut more” (SM5), “According to the data, there is still a reserve [for cutting more], but now it [utilisation level] is optimal” (SS10). Most state forest managers and larger PFOs, typically forest businessmen, refer to sustainable forest management

balancing the economic and environmental needs: “*firstly, economic benefits and increase of forest value, no overexploitation, full-scale management for ecosystem services*” (SO13), “*we aim for continuous timber production while keeping the environmental requirements, not devastating the forest, so it is left for next generations*” (SM8).

PFOs identified as passive forest lovers or household foresters and especially state forest managers apply some specific management measures to favour biodiversity: “*We pay much attention to that [biodiversity]: retaining standing trees [in fellings], leaving dead wood, selecting hollow trees*” (SM4), “*The protection of woodland key habitats, retention of live trees and deadwood, protection of hollow trees are among the first priorities*” (SM3), “*Biodiversity is important, leaving some timber to decay is needed, (...) making nesting-boxes, leaving hollow trees uncut*” (SO9). According to forest businessman even if biodiversity is not the top priority, the applied forestry measures care for it “*by default*”: “*the forest is managed not for the preservation of it [biodiversity], but rather managed [for timber] in a way to preserve it [biodiversity]*” (SO13).

In general, environmental consideration is perceived as preserving the forest or carrying out some nature-oriented management practices. Voluntary nature protection is carried out by some of the PFOs, particularly those classified as forest lovers and household foresters: “*I never cut hollow trees, I leave some wood to decay, have left some standing trees in the clear-felled stand, as well as natural regeneration of oak, maple and lime, although the site is not really suitable for them*” (SO10), “*I have planted fruit-bearing shrubs for birds and built feeding places for animals*” (SO14). State forest managers are following FSC (Forest Stewardship Council) certification requirements, which for them are more like additional legal demands rather than a purely voluntary endeavour: “*[Certification] criteria are strict, but we fulfil them*” (SM8); “*It is still the same work, just we have to do it better, certification brought lots of new rules and restrictions, it affected our work in that way*” (SM12). But for the most part, the environmental consideration firstly means following the state regulations: “*Everything [in nature protection] is based on rules and regulations*” (ZM5). Both, state forest managers and PFOs agree on regulatory and restrictive characteristics of Lithuanian nature protection: “*Biodiversity is [‘produced’ through] directives, woodland key habitats and protected areas were established because we had to [due to regulations]*” (ZM4), “*Biodiversity is produced by following the requirements, our strict regulatory system with lots of its’ rules ensures it, if you follow the regulations, you fulfil it [environmental protection].*” (SO13).

Environmental protection via strict regulations is judged rather well by many informants: “*[requirements] are rather strict, but not too strict*” (ZS6), “*Some particular restrictions are exaggerated, but looking at a whole they are not too strict*” (SM4), “*Our legal acts are very strict, but also very well meet the goals of sustainable forest management*” (SO13). Small PFOs adapt to the situation: “*[Regulations] do not affect me, I adapt to them*” (SO10), “*I adapt, [there is] no other solution*” (SO2). However, these are the owners having forests with moderate restrictions (Groups III and IV). State forest managers in Žemaitija CSA are critical: “*There are a lot of [restrictions], almost everything is constrained (...) [Requirements] are exaggerated, no coordination between institutions*” (ZM5), “*they are overstated in some cases, strict and pointless, should be considered from the human side*” (ZM1). Some owners are bluntly upset and even become emotional: “*[Restrictions are] a scathe, destroy the timber, you can see a tree rotting! I would understand if there is some badger mating, you consider [restrictions] then. But some tup head redrew the border of regional park and expanded it somewhere! If making whole Lithuania a protected area, then I agree.*” (Z07).

3.2.2. Forest land zoning

Forestland zoning through the system of so-called forest groups constitutes a backbone of multi-functional forest management in

Lithuania. Informants that are mostly managing commercial forests of Group IV, (CSA Suvalkija) are comfortable with the present zoning: “*Groups are good, everything is well done, it is clear, (...) we have no Group II, and the Group III creates little difficulties as it does not differ from the IV much*” (SM4); “*We have (...) mainly IV, (...), I do not see any problems, [the groups with restrictions] were segregated rather normally, along the streams, they were not expanded too much.*” (SM8). Large private forest businessman avoids buying forests with many restrictions: “*We are not buying forest plots of Group II, we only take a look if a small part of the plot is of Group II*” (...) “*we have some forest of Group III (...) it [Group III] makes no big difference, higher cutting ages, restrictions on cutting time, but you know that and consider it before buying, then management is planned taking these limitations into account*” (SO13). Some smaller owners having forests of Group III take it as inevitability: “*We adapt to the requirements, nothing else to do*” (SO2). For a householder type owner Group III does not constrain his low intensity management: “*All my forests are of Group III (...) that just means 4 months of no cutting, it is not effecting me at all, I adapt.*” (SO10).

In Žemaitija CSA state foresters face substantial restrictions: “*93% of total [state] forest area have [additional] management restrictions in our [forest] district*” (ZM5). “*We are different from other state forest enterprises, because we have only 40% forests of Group IV, all the rest are protected, this gives some specifics as you have to survive (...) while ‘taking out’ from 40% and ‘putting’ back to 100%, basically you are utilizing these 40% and have to make living from that.*” (ZM2). A PFO also perceives restrictions as misfortune: “*I only have the [forest of] Groups IV and III, but the ones who have such a disaster: [forest of] Group II, I am really not jealous of that, there is no mechanism of compensations, one has property, but can’t use it.*” (Z05).

The relatively mild restrictions in the Group III, compared to the Group II, are tolerated by some of the informants, but others question them including a forestry inspector: “*Group III prolongs allowable rotation ages by 10 years [compared to Group IV], what does this mean for a granny? [10 more years to wait until cutting is a lot for an elderly owner]. Conversely, it has no importance [for environmental values] just the timber is more rotten. State should compensate [for the restrictions]. (...) They are clearly exaggerated [restrictions of Group III]. There is no need for restrictions in forest Group III, maybe they [present restrictions] should remain in Group II*” (ZS7). Even informants with strong interests in environmental protection have doubts about the purpose of Group III: “*I can grasp only [the meaning] of forest Groups I and IV, we have a strict reserve, I am very glad nothing [no management] is done there; these intermediate [Groups II and III], I do not know... Maybe the II is good in a peat land, but I have nothing to say about the III*” (ZS1); “*Groups I–II are needed; III and IV should be merged*” (ZS10).

Group II is criticized for excessive restrictions: “*Restrictions in Group II are too severe, because owners are much constrained*” (ZS10); “*Group II is exaggerated, it is just to reach the targeted percent [of protected forests], they lack actual specific function, the zones are excessively expanded, and Lithuania is not the vastness of Siberia, [the groups] must be more carefully planned and only appropriate plots chosen.*” (ZM3). Forest management planner working all over Lithuania refers to concrete cases where Group II is inappropriate: “*I had several cases with Group II. Nothing is allowed there. [Sometimes] Group II is totally off-topic [irrelevant]. For example, landscape reserve because of the hills, but you can see them only after cutting the forest, it is meaningless. Or anti-erosion forest of Group II, but there is no slope, just a bog. No sense for Group II, just a mistake.*” (P10). Forest management planners admit restrictions in Group II are so severe that there is little sense to create a management plan: “*Around 10% of all management plans [for private estates] contain some stands of Group II, so you do [plan] nothing there*” (P3).

Quite a few informants criticise the attribution of particular stands to forest groups: “*They [forest groups] should be changed; (...)*

I do not understand it sometimes, because within a distance of 100 meters forests are of different groups, but everything is identical (. . .). Private [owner] has some particular group and cannot cut, but the trees are over-ageing, that is a problem" (SS13). In CSA Žemaitija several informants gave the same example of improper zoning, informatively depicted by the head of a forest district: "Sometimes there are discrepancies, for example: state forests of Group IV in the territory of regional park on one side of the road, and private forests outside the park, but on the buffer zone having Group III. That was established mechanically, without thinking, discussing, done somewhere in the office, approved and that is all. The cutting age is higher by 10 years for the human [owner], but he gets nothing [no compensation]" (ZM4).

Forest groups are usually changed when establishing or expanding PA: "Our forest district is mostly recreational, after establishment of the regional park, forest groups were changed and everything is restricted" (ZM5). That is done without notifying the owners: "The territory of regional park was expanded to my [land] plot, but no one asked me [about it]" (ZO5). Moreover, the owners do not get any compensation: "It must be well considered when establishing, not only when some environmentalist decides and restrictions are put on many owners even without compensations." (ZO5).

Forest zoning causes social injustice, as most of the owners did not know about restrictions in particular groups, but later faced constraints in forest management: "There are grandmas, who got their forests and can't collect firewood." (ZO5), "It [restitution of forests with management restrictions] is unfair, because even when selling [the forest] you will get less, particularly in Group II you can practically do nothing" (ZM5). A forest management planner gives a concrete example: "6–7 ha recreational [forest] plot with a large area of Group II is an evident example of the harm that state causes to a person [owner]. It is not understandable why it is recreational, one could pay 150,000 Litas [43,443 Euro if it was commercial], but with the forest management plan prepared mainly for recreation, it is worth around 40,000 [11,585]. That person [owner] really needed money for [paying] his loan to the bank. When getting the forest he probably knew nothing about the groups." (P2). Another planner claims plainly: "Firstly there had to be no restitution in Group II" (P3).

The need for better justification of zoning is mentioned by several informants ranging from environmentalists to forestry contractors: "Some of the restrictions, like protection zones around water bodies, are adopted from the old times, without assessing if they are appropriate now" (ZS1). "We need more accurate monitoring to clarify the places where [something] must be protected, where cutting is allowed, clearly restrict [management] where it is needed and allow [full-scale management] where it has no effect to the environment" (ZS8). When imposing new restrictions a local dialogue is needed as said by a passive forest lover: "A compromise between foresters and environmentalists is needed, not blind implementation of directives and not forgetting that locals do not intend to harm." (SO14). The following quote by a high-positioned representative of state forest enterprise well summarises the key issues, as perceived by many informants: "Appropriate in many places, but also inappropriate in other, as it was done just to get it done, and it is unclear what the gains are, there is no adaptation to local specifics. It was done by administration without taking into account the opinion of specialists, lots of unprofessionalism, lots of corruption, lack of awareness, that generates corruption and mess, protected areas must be only established where it is needed." (ZM3).

3.2.3. Nests of rare birds

In the interviews of forest management planners, the protection of the nests of rare birds came forward as one of the most pending issues in relation to environmental consideration. While not questioning the need to protect birds, the flaws of the system make the nests an unwelcome burden both for PFOs and for planners: "[Nests] are the headache for an owner (. . .), the estate with a nest is

condemned – no one will ever buy it" (P2); "Frankly, if [I see] a bird [nest] – I run out from the forest, one can throw the [management] plan to the fire – nothing is allowed there" (P6).

State forest managers claim that there was no threat for the birds even before the establishment of protected zones: "At the time when there were no restrictions on cutting time [and protected zones around nests] we just left [some area around the nest] based on our judgement and there were surely no threat to the birds." (SM8). An ecologist from a regional park claims birds will live in a suitable place even if it is not protected: "If a place is suitable, Sea Eagle will live there, there is no need for artificial nests or effort to attract them." (ZS1). Even an ornithologist agrees that birds are attached to suitable nesting places without nest protection: "We are making an experiment: the nest has been removed three times, but birds were nesting there anyway." (S1). However, a state forest manager has seen benefits from the protection: "White-tailed eagles have been seen. We established protected areas where it started nesting. It works: there are two nests now." (SM3).

The problems start with identification of nests, in most cases no one bothers to inform the owners about presence of such a nest on their estate. Owner normally gets to know about the nest from the planners when preparing forest management plan in order to carry out a final forest felling: "When gathering data for the project I got to know about inventoried nests on the estate, then told the owner she cannot cut anything and the plan cannot be prepared" (P7). The inventoried nests are put to a database and these are the only ones much cared about: "inspector cares like a spit about the non-inventoried ones" (P8), "I've seen some non-inventoried nests of buzzards (they were protected at the time) but I 'closed my eyes' and did not take that into account [when planning the cutting]" (P10). The registered nests are not monitored, to check whether they are still in use: "there are lots of buzzard nests, they were protected, but now their numbers augmented substantially, I do not know if they were removed from that list" (P1), "the nests are inventoried fairly well, but the main problem is that they are not abolished on time [the unused ones]" (P5), "I've had a project in one case – inventoried nest of black stork in the middle of mature forest, the owner carried out selective cutting instead of clear felling on the whole estate, though the stork has not been living there for three years" (P3). Birds change their nesting places, but the protection status is constant and must be kept, creating unintended incentives for a "clever navigation" between obligatory restrictions and actual situation in the forest: "If I see any nest, I check if it is inventoried in the data of forest management planning, if it is not, I call the inspector and ask, if they know [that the nest is inventoried], I say to the owner that nothing can be done here. If there is no nest in any of the registers and no fresh faeces – I pay no attention" (P6).

The inventoried nests cause harsh management restrictions regardless if it is commercial or protected forest. The owner gets no compensations and blurry chances to reject the protection status if (when) the nest is abandoned. In such a situation some of the owners resort to a grim solution, i.e. removing the nest: "If I find an inhabited nest, firstly I inform the inspector, secondly the owner, if the owner gets to know that first, the nest would be eradicated" (P10). "Hypothetically, if there is a nest – it is very wrong to speak like that – the nest should be shaken out" (P3). The problem threatens both, rare and ordinary bird species: "Generally, I am concerned about these nests, there were two cases when the trees with [any] nests were cut down because there could be 'the nest' [of a protected species that could possibly be inventoried]. One can never know if a nest belongs to a protected species or not" (P1). In some cases forest management planners bluntly advise the owners: "If I see the owner wants to cut [the forest], I say 'cut the nest' (. . .) I've had around three such cases" (P9). A planner is stunned with the extent of this problem: "If I tell to the owner that cutting is not allowed because there is a nest, [then] everything is obvious. . . [the owner gets rid of the nest]. I know 10 cases when the nests were removed., how many I do not know

Table 3
Summarized perceptions of environmental consideration by different stakeholder groups.

Stakeholders	Generalized perceptions of environmental consideration
PFOs: Passive forest lovers	Apply voluntary nature protection; forest management in most cases not hampered by environmental restrictions. In general, Lithuanian forests cut too much.
Household foresters	Apply voluntary nature-oriented forest management, adapt to restrictions, except Group II forests – there regulation too strict and lacks compensation. In general, forests cut too much.
Forest businessmen	Adapt to restrictions in Group III, but are not buying forest with more restrictions, as they are exaggerated in Group II. Criticize hasty environmental restrictions without compensations due to both, forest grouping and PZN. In general, cutting level is appropriate.
Ad hoc owners	Rarely know restrictions and forest group of their property. No prominent perceptions.
State forest managers: CSA Suvalkija	Dominant commercial forests (Group IV), few environmental restrictions and several PZN are judged well, so cause no problem. In general, cutting level sustainable.
CSA Žemaitija	Additional restrictions due to presence of regional park and dominance of Group II and III forests are judged as exaggerated and faulty: economic losses, lacking rationality, blurry environmental gains. In general, cutting level sustainable.
Forest management planners	Occasionally mistaken forest groups with forest characteristics mismatching the targeted ecosystem service. Restrictions in Group II too severe. Some measures to protect nature are ineffective, especially the PZN, in practice working against the intended purpose. Lacking compensations for restrictions.
Other stakeholders: Forestry inspectors	Environment is well protected under current regulations, but lacking compensation for restrictions is detrimental and socially unfair for owners. Forest groups are irrelevant in some places, restrictions in Groups III and especially II exaggerated. Faulty PZN.
Forestry contractors and wood processing companies	Cutting time restrictions are controversial: doubtful benefits for nature bring employment problems and hampers timber supply. Restrictions in Group II exaggerated. In general, cutting level sustainable.
Environmentalists (ornithologist and representatives of PA)	Environment is best preserved in strict reserves; benefits of partial restrictions without specific measures in Groups II and III are questionable. Improper zoning, faulty PZN, absent compensations. Nature protection is often restrictive, lacking actual benefits, adaptation to local specifics and scientific background.
Others (proxies for public opinion)	Forests are cut much. Environment needs protection and restrictions on the whole are appropriate or too mild in some cases (not familiar with details).

about.?” (P8). The problems are well known to ornithologists: “Previously trees were disappearing; now the nest is silently removed in winter.” (S1).

Sometimes even inspectors take the owner’s side: “I’ve had such cases in my practise (. . .), a nest of non-protected species, the inspectors told ‘why the hell did you leave it, if [ornithologists] come to inspect [your estate] you [may] have a problem. This is what strict restrictions without compensations lead to. (. . .) Why should I [refers to a hypothetical owner] sacrifice almost everything to the society, but society gives nothing to me as a reward?” (P3). Planners see compensations as a way to solve the problem: “state should compensate” (P7), “fair compensation is a must” (P8). According to an ecologist, the restrictions are questionable also in terms of environmental rationale: “These restrictions are not properly estimated. That is the incompetence of nature scientists when answering the question what nature truly needs.” (ZS1). An ornithologist problematizes it further: “The problem is known, just silently left [unsolved], (. . .) maybe it [current state] is suitable [for everybody], no one is complaining too much, no one is doing anything. (. . .) Compensations may be the solution, but the question is if it should be one time or [continuous] while the birds are nesting. Another problem – there is not enough financing for research on birds, no overall inventory, I cannot distinguish the radius [for different species], sometimes [it is] too small, sometimes – too big, but there is a lack of research [on that].” (S1).

3.2.4. Summarized perceptions by stakeholder groups

Stakeholders’ attitudes towards the environmental requirements vary considerably (Table 3). Managers of state forests generally perceive themselves as caring forest stewards and assign high importance to nature values. Their attitudes towards environmental requirements appear to be strongly affected by the degree of restrictions they face. Foresters from CSA Suvalkija with relatively small share of non-commercial forests (Groups I–III) judge the cur-

rent environmental regulation to be appropriate. Foresters from CSA Žemaitija, where protected areas and Group I–III forests are abundant, find the requirements excessive. Attitudes by PFOs are affected by multitude of factors and differ radically among owner types (Stanislovaitis et al., 2015). Small-scale and less active forest owners tend to align well with the general societal values, exhibiting strong preferences for environmental conservation and in some cases even appealing for stronger regulation of forestry. Large-scale and more business-oriented owners tend to regard the degree of restrictions as disproportionately large, though they remain compliant with the legal demands.

4. Discussion and conclusion

Our analysis demonstrates that environmental consideration has certainly increased in Lithuanian forestry. The number and size of protected areas exploded in the first half of 1990s, all forests were subjected to zoning with ensuing management restrictions. New environmental measures have been introduced also in timber production forests, such as leaving deadwood and biodiversity trees. A stringent system of control is in place. In accordance with this, most of the interviewed forestry stakeholders perceive strong regulation and increase of environmental consideration. Supporting our hypothesis, heavy regulation is judged negatively by many of the local forest stakeholders proposing that economic incentives must be present together with imposed restrictions, especially on private properties. Properly designed incentives would naturally account for heterogeneity of forest owners (Horne, 2006), in contrast to “one fits all” regulation. As shown by experience of old democracies with long history of private forest ownership, strictly regulatory approach often fails to protect endangered species (Langpap, 2006). Driven by socialist legacies of central planning (Brukas, 2015), countries in transition still largely rely on regulatory policy instru-

ments. Polyakov and Teeter (2005) and Blicharska et al. (2012) illustrate the cases when such forbidding approaches do not reach their purpose, hinting at a dire need for further critical studies.

Overall, Lithuanian forest groups can be seen as a successful example of forestland zoning explicitly addressing multiple forest functions (ecosystem services) at landscape level. Deep qualitative interviews, however, expose some critical issues. First, some forestry and environmental conservation practitioners question the very definitions of forest groups, such as Group III that appears to have been created more for the sake of “good forestry image” rather than based on scientific knowledge or practically proven measures to increase protective forest capacity. More critically, office-based and hastily performed forestland zoning entails many mistakes, where forest or landscape characteristics do not match the intended purpose. Such careless planning further aggravates the violations of social justice, as PFOs were restituted their properties with different degrees of restrictions without compensations.

The nests of rare birds represent a salient example of faulty environmental consideration that traps PFOs and the rare birds into a lose–lose situation. As a protected zone typically covers several estates, the effected forest owners face two bad choices: either admit the registration of the nest simultaneously accepting decimation of the economic value of her/his property, or act against their conscience and destroy the nest before it becomes known to the authorities. Knowing that nests are usually discovered when planning final felling and realising the extent of benefits foregone for a small-scale forest owner (Brukas et al., 2015), it is not surprising that many opt for “shaking out” the nest. Understanding the unreasonableness of the entire system, forest planners and forestry inspectors often turn a blind eye, in some instances even advising the owner to “deal with” the nest. Thus the regulations turn out to work exactly opposite to the intended purpose, prompting nest destruction and serving as an ugly example of the detriment that excessive environmental requirements without compensation can bring. Environmental authorities must have known this situation for at least a decade, thus it is indeed odd that no efforts have been made to revise the system.

We see the faulty protection of nests as an issue of top urgency that needs to be addressed by introducing proper compensations to the affected PFOs. Complementarily, there is a need for introducing a system of continuous monitoring and a functional mechanism for removing the protected zones around the abandoned nests.

Less urgent but still important improvements are needed in the system of forest groups. Thorough scientific justification must be provided for the classification of the groups, e.g. whether a separate Group III is indeed necessary to protect soil and water. More importantly, there is a need for a careful rezoning of all forests that could be accomplished during the conventional cycles of forest management planning. To address the current flaws effectively, the following measures could be worth considering: (i) on site checking of the actual forest stands and landscapes, especially those with presumably high environmental values and those with severe forest management restrictions; (ii) consulting local forest managers, owners and environmental experts, to make proper use of local knowledge and prevent potential conflicts; (iii) reducing the economic damage to the affected PFOs, either by removing Group II status in the private forests or by offering proper compensations for inflicted economic losses. We believe that introduction of compensations would not only be beneficial by restoring the social justice; they also would make the responsible authorities more costs-conscious, actively looking for solutions that bring the highest environmental benefits for the least economic costs both for forest owners and for the society as a whole.

As a concluding note, our findings make us believe that the Lithuanian forestry gives due regard to environmental values, though somewhat excessively based on rigid regulatory measures. Further improvements of environmental consideration should focus on relying less on “bureaucratic, office-based regulation” but rather on collaborative endeavours and careful search for solutions fitting the local socio-ecological realities best. This would prevent such systemic blunders as the destruction of protected birds' nests; and diminish such local “inadequacies” as the flawed zoning of forests around the regional park in our case study.

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Appendix A.

Table A1
Characteristics of cited informants.

Code	Age ^a	Gender	Description
Private forest owners (O)			
ZO5	50–59	M	36 ha 'household forester' working as a state clerk in the regional administration
ZO7	60–69	M	1000 ha 'forest businessman' also farmer and local politician
ZO10	40–49	F	1 ha 'passive forest lover', municipal officer and stock-rising farmer
ZO11	50–59	F	22 ha 'passive forest lover', half of the area recently afforested unused land
ZO15	60–69	M	55 ha 'passive forest lover', retired scientist residing 300 km away from his holding
SO2	30–39	M	40 ha 'household forester', half of the area recently afforested unused land
SO9	80–89	M	1.5 ha 'household forester', retired forester with 44 years of professional work experience
SO10	50–59	M	13 ha 'household forester' having forestry background
SO13	30–39	M	3000 ha 'forest businessman', professional manager of private forests
SO14	60–69	M	22 ha 'passive forest lover', cultivates ecological farming and handcrafting
State forest managers (M)			
ZM1	30–39	F	Senior administrative officer at the headquarters
ZM2	50–59	M	Senior administrative officer at the headquarters
ZM3	60–69	M	Senior administrative officer at the headquarters
ZM4	50–59	M	Head of forest district
ZM5	40–49	M	Head of forest district
SM3	50–59	M	Head of forest district
SM4	40–49	M	Head of forest district
SM5	40–49	M	Head of forest district
SM8	60–69	M	Senior administrative officer at the headquarters
SM12	60–69	M	Forest ranger in one of the forest districts

Table A1 (Continued)

Code	Age ^a	Gender	Description
Forest management planners			
P1	30–39	M	<10 years of experience, also works in agricultural sector
P2	30–39	M	<10 years of experience, also works with timber trade and processing
P3	30–39	M	<10 years of experience, also works for private forest management company
P5	60–69	M	>40 years of experience, also works with state forest inventory
P6	30–39	M	>10 years of experience, full time forest management planner
P7	30–39	M	>10 years of experience, also works with preparation of forest management schemes
P8	30–39	M	>10 years of experience, also works in timber and forestland trade
P9	60–69	M	>20 years of experience, also works as a taxator in state forest inventories
P10	40–49	M	>10 years of experience, also works as a forestry consultant for a private company
Forest stakeholders			
ZS1	50–59	F	Senior administrative officer at regional park
ZS6	30–39	F	Local officer at National Paying Agency distributing EU support
ZS7	60–69	M	Forest control officer (inspector) at the local office of State Forest Service
ZS8	20–29	M	Forestry contractor mainly working in forest regeneration and afforestation
ZS10	40–49	M	Head of large company producing wood for heating, also 1500 ha forest owner
SS3	30–39	F	Senior clerk at the municipality working with residents mostly regarding social issues
SS10	50–59	M	Head of sawmilling and wood biofuel production company, 130 ha forest owner
SS11	30–39	F	Officer at the department of economic development in the municipality
SS13	40–49	M	Head of production unit at wood processing company
S1	40–49	M	Ornithologist carrying out projects concerning birds of rare species

^a To secure informants' confidentiality, their ages are presented in 10-years classes.

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