

Article

Socio-Economic Effects of National Park Governance and Management: Lessons from Post-Socialist Era Estonia

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Abstract: Despite the significant increase in protected territory globally, there is a common understanding that the designation of protected areas alone does not guarantee their effectiveness nor halt the loss of biodiversity. In addition to biodiversity conservation, protected areas are expected to perform a number of other functions, such as provide ecosystem services and improve local socio-economic conditions. Therefore, the need to strive towards mixed, decentralized conservation management and stakeholder involvement is increasingly emphasized. Although there is limited research, it has been noted that protected areas have not served wider objectives effectively enough. The current study provides insight concerning socio-economic effects of different governance and management practices of protected areas based on perceptions of residents and stakeholders of five national parks of Estonia. It was found that conservation status has an important impact on local socio-economic conditions largely depending on governance and management practices, resulting in both, positive and negative effects. It was concluded that the centralization of nature conservation and the abolition of protected area administrations have led to a gradual distancing of nature conservation from local conditions and the population, causing concern about the preservation of the living environment.

Keywords: national parks; socio-economic effect; governance of protected areas; local communities; cultural landscapes; management of protected areas; Estonia; post-socialist; Europe



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1. Introduction

Protected areas (PAs) are spatially defined, recognized (either nationally or, for example, in the World Database on Protected Areas), and effectively managed sites, dedicated to the long-term conservation of biodiversity and natural values with associated ecosystem services and cultural values [1]. Protected areas are generally recognized as an essential measure for the conservation of species and biodiversity [2–4], but their importance is also increasingly emphasized in combating climate change [5–8], contributing to balanced and sustainable socio-economic development [9–12], preserving traditional and cultural values and landscapes [13–15], and as an important element in maintaining people's mental and physical health [16–18]. Although conservation areas have been created for thousands of years in various forms and purposes (e.g., conservation of sacred places, game grounds, preservation of mast trees) [19], modern nature conservation and protected areas are considered to be based on ideas and national parks established in the second half of the 19th century in the United States, Australia, Canada, and New Zealand [20,21]. Since the beginning of the 20th century, the number and extent of protected areas in the world has been constantly growing. The activity and pace of the establishment of protected areas has been directly related to the geopolitical and economic situation in the world, which is why growth has not always been linear. The creation of protected areas gained momentum in the 1970s in response to major environmental and health problems and as a result of

the so-called Environmental Revolution [22], and peaked between 1985 and 1995 [23]. The biggest challenge of this century is to combat climate change, and the creation of additional protected areas is seen as one mitigation measure [24,25]. The creation of new protected areas gained momentum as the Convention on Biological Diversity set an ambitious target to take under protection at least 17% of terrestrial area and inland water, and 10% of coastal and marine areas by 2020 [9]. To date, the period under review has been completed and targets have been largely met, with 16.6% of land and inland water ecosystems and 7.7% of coastal waters and the ocean known to be protected. As a significant amount of information is still missing, it is very likely that the actual coverage of protected areas will be higher than the target set [26]. The active creation of new protected areas is likely to continue in the near future [27].

In addition to the generally acknowledged positive effects on biodiversity conservation [12,28,29], protected areas also have important socio-economic effects [30–34]. A large proportion of protected areas are located in natural or near-natural ecosystems [1], which are often located in rural and peripheral areas [35], where the socio-economic situation is modest compared to urban centers [36,37]. Therefore, conservation status can play an important role in shaping local and regional socio-economic conditions [38–40]. The direction (positive–negative) and extent (significant–insignificant) of the socio-economic impact depends largely on the type of protected area and the governance and management system and practices. [23,41–43]. The most commonly used and globally recognized system for the classification of protected areas is that developed by the IUCN, which divides protected areas into six categories based on management objectives (incl. category I, with two subdivisions). The definition of the categories is based on the extent of human impact and the naturalness of the areas. Categories vary from strictly protected areas (cat. I–III) to areas where multiple human uses are permitted (cat. IV–VI) [1]. By defining or designating a protected area, there is no obligation to follow the names provided by the IUCN categories, so in different regions there may be very different content behind a protected area with the same name. For example, a national park may belong to category II (i.e., in the USA), to category V (i.e., in the UK), or be zoned and include areas of several different categories (i.e., in Estonia).

Besides management objectives, protected areas also differ greatly in their governance and management system and practices. If governance is based primarily on which organization or interest group holds the management authority and responsibility and is accountable for a protected area, then management involves planning, directing, organizing, and evaluating actions needed to achieve the conservation goals [44–46]. Although inextricably linked, both distinguish between an inclusive or exclusive approach (also centralized or decentralized) based on the collaboration and involvement of stakeholders in the processes and decision-making [45,47]. Commonly, four main types of governance are distinguished: governance by government (exclusively by government agencies), shared governance (co-management, several stakeholders), private governance (exclusively privately managed), and governance by indigenous peoples and local communities (managed by local people) [1,45]. Most protected areas have been established and managed by governments, but an increasing number of sites, which meet the criteria and serve as PAs, are set up and co-managed by NGOs, community or private initiatives, or by indigenous people [1,29,43]. In recent decades, there has been a paradigm shift towards mixed, decentralized management and stakeholder involvement [12,42,43,48,49], and it is widely believed that the success and conservation effectiveness of protected areas are closely linked to it [21,23,50–52].

Based on the type of protected area, management category, and extent of human impact (disturbance and naturalness) alone, it is not possible to assess the effectiveness or significance of the protected area [43,53,54]. Formerly, the effectiveness of protected areas has been assessed primarily on the basis of biodiversity conservation, but in recent decades other measures (such as the socio-economic dimension) have been added. Protected areas are now considered to be more complex systems and are expected to mit-

igate several other problems besides biodiversity loss, i.e., reducing poverty, providing ecosystem services, improving population trends, and contributing to balanced regional development [9,27,42,55–57]. There is a shift towards people-centered protected areas, and it is increasingly recognized that people-centered areas are as important as strictly protected areas [53,58,59]. This has also necessitated changes in governance and management practices of protected areas, such as implementing adaptive management and governance systems, participatory planning, co-management, and establishing compensation and benefit-sharing mechanisms [9,45,60–62].

Although efforts have been made to assess the effectiveness of protected areas in a new, expanded context, empirical research is still limited [21,25]. It has been found that protected areas have not served their wider objectives effectively enough [43,63,64], and more specific, measurable targets and indicators would be needed to make progress (i.e., Aichi target 11, which boosted the establishment of new protected areas) [27,63,65]. The effectiveness of governance and management systems and practices is difficult to assess, as it requires a long observation period and comparability [58]. Besides, protected areas around the world differ considerably by geographical location and properties, socio-economic conditions, and political environment, which is why the same practices are likely to have a different effect [48]. Governance and management systems and practices are easier to assess if there have been changes in the system. This allows for the assessment of the impact and effectiveness of different practices under similar conditions [56]. In highly developed countries (i.e., in Europe), systems and nature conservation management are relatively stable compared to medium and less developed countries [42]; therefore, major changes are less frequent and there are considerably fewer studies on governance and management practices [21,42].

Estonia is an interesting field of research in this context, as during the last 30 years, drastic changes have taken place in the organization of both society and nature conservation [66]. After the collapse of the Soviet Union, there was a transition from an extremely centralized system and from a command economy to a democracy and a market economy. The restoration of private property and the return of land to its rightful owners also drastically changed the organization of nature conservation. A situation arose where a significant proportion of protected areas included private land, which necessitated the establishment of participatory planning and management.

In first decade of independence, Estonia had multi-level governmental management, where strategic decisions were made at the central government level, but the administration of national parks and larger nature reserves took place through local administration offices. In the late 1990s, the first support measures as pilot projects were introduced in some protected areas. In the following years, support measures and subsidies expanded considerably, which led to active participation of the local populace in the restoration and management of protected areas. This was supported by the efforts of local administrations towards close cooperation, personal approach, involvement, and awareness raising [30,67]. Since the beginning of the 2000s, several reforms have taken place in the organization of nature conservation in Estonia (described in more detail in Section 2.1 of the current paper) and contrary to global trends, it has gradually moved towards centralization. Among several changes, it has led to the abolition of local administrations and the alienation of nature conservation from local conditions.

The research presented in this article assesses the impact of changes in the organization of nature conservation on local socio-economic conditions based on a stakeholder survey conducted in five national parks of Estonia. The results of the research are compared with previous studies conducted in the same national parks in 1997 [68] and 2009 [69], which provides an opportunity to analyze changes and their causes over a longer period of time and place the obtained results in the context of important political and social events.

The aim of this research was to study the attitudes and opinions of local residents and stakeholders towards protected areas in general, their governance and management system and practices, the socio-economic impact, the changes that have taken place, and

possible changes in the future. In order to answer the aims of the study, the following research questions were posed:

1. Does conservation status affect the local socioeconomic conditions of national parks?
2. What is the attitude of local residents and stakeholders towards the nature conservation governance and management system and how do they perceive the impact of different practices on local socio-economic conditions?
3. According to local residents and stakeholders, what are the main problems related to the nature conservation governance and management system in national parks and what are the preferred solutions?

2. Material and Methods

2.1. Overview of Governance and Management of Protected Areas in Estonia 1991–2021

Over the last three decades, a number of important events and changes have taken place in Estonia, which have also had a strong impact on the nature conservation system and practices (Figure 1). In 1991, Estonia regained its independence and the Soviet Union collapsed, but major changes in the nature conservation system began even before. In 1990, nature conservation was separated from the forestry service and protected area administrations were formed for large, protected areas (so-called manned protected areas with individual legal status). The restoration of independence was accompanied by drastic changes in society. There was confusion and, in part, a legal vacuum in all areas of life as the pre-existing system, including legislation, had to be replaced. During the Soviet era, all land was nationalized and there was essentially no private ownership. In 1991, the Land Reform Act was adopted, which gave the owners (or legal successors) of land illegally expropriated in 1940 the right to demand the return of the land or compensation [70]. The Land Reform Act was legally superior to other laws (incl. the Nature Conservation Act). In the conditions of ongoing land reform, protected areas needed more support/special attention, which was why it was important that the category “nature conservation land” be created in the land register. One of the most important decisions for newly independent Estonian nature conservation was to preserve the continuity of protected areas: areas designated during the Soviet regime in the Republic of Estonia, regardless of the form of land ownership. This prevented the regression of nature protection only to the land originally owned by the state. The process of land restitution itself took a long time, and 30 years later there are still land parcels where ownership is unclear. Such lands are considered Unreformed State Lands, which are managed by the State until returned to their rightful owners.

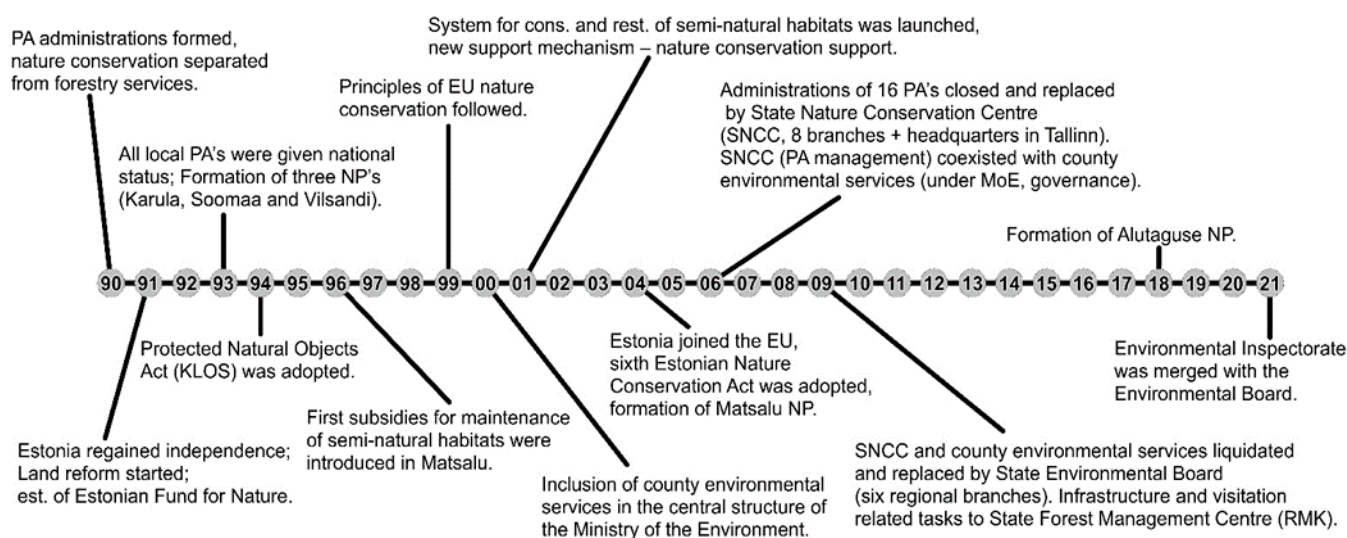


Figure 1. Timeline of important events affecting nature conservation in Estonia.

In 1991, the Estonian Fund for Nature (ELF), the first and most effective non-governmental nature conservation organization in re-independent Estonia, was founded [71]. Taking advantage of the legal vacuum and the mixed state of land reform, several new protected areas were established in the early 1990s on the initiative of the Estonian Fund for Nature, including the creation of three national parks (Karula, Soomaa, and Vilsandi) in 1993 on the basis of existing protected areas. In the same year, by a decree of the Minister of the Environment, all local protected areas were brought under Ministry of Environment and thus made national.

In 1994, the Protected Natural Objects Act (KLOS) was adopted [72]. Among other things, the law stated that protected areas may be established and located on private land, but also provided for the possibility of exchanging protected land for equivalent state land outside the protected area. This provided a legal basis and led to significant restrictions on private property in protected areas.

KLOS determined the basis of governance and management systems of protected areas. The law stipulated that the manager of a protected natural object is a state agency, which meant a governmental governance and management system was established. While in manned protected areas local administrations were responsible for both governance and management, un-manned PAs were governed by the state and managed by regional environmental services [72].

Since 1999, the Estonian nature conservation system has taken into account the principles of the European Union, which are based on the Birds and Habitats Directive, and the main output of which is the Natura 2000 network. In 2004, Estonia joined the European Union [73], and in the same year the Sixth Estonian Nature Conservation Act was adopted [74], the preparation of which had already been based on the requirements established in the European Union nature protection directives for the protection of wild species and habitats.

Since 2000, there has been a gradual centralization in the organization of Estonian nature protection, which began with the inclusion of county environmental services in the central structure of the Ministry of the Environment, thus moving the management of all unmanned protected areas to the central government level.

In 2006, the administrations of 16 protected areas were closed and replaced by the State Nature Conservation Center (SNCC), with eight regional branches and a headquarters in the capital, Tallinn [75]. This separated the governance and management of protected areas—the task of governance was given to the environmental services under the administration of the central government and practical activities remained with the regional nature conservation centers. The areas of activity of the Nature Conservation Center were conservation planning, nature conservation work, species protection, and nature education. This included the construction of hiking trails, boardwalks and observation towers [75]. The SNCC and its regional branches coexisted with county environmental services until 2009, when the Environmental Board was set up to replace both [76]. The Environmental Board has six regional branches in Estonia, and it is the main institution responsible for nature conservation in Estonia. The role of the Environmental Board remained, with everything related to the management of protected areas, and the organization of visits to protected areas and the implementation of infrastructure work started to be organized by the State Forest Management Center (RMK). As of January 2021, the previously separate Environmental Inspectorate was merged with the Environmental Board [77].

2.2. Overview of Research Areas

As of 1 January, 2020, there were 962 protected areas in Estonia, covering 19.4% of the land area and 18.7% of the sea area [78]. The surface of protected areas in Estonia has steadily increased over the last two decades. The biggest increase took place in 2004 when Estonia joined the European Union and the Natura 2000 network (area increased from ~ 10% to 17%) and in 2005 (area increased from 17% to 18%). An important leap has also taken place in the protection of the territorial sea. In the early 2000s, only 3% was under protection compared

to the current proportion [79]. Thus, by 2020 the Aichi target 11 objectives of PA coverage in Estonia were met and exceeded. However, as elsewhere in the world, there is little information on the effectiveness and socio-economic impacts of protected areas [21,25,30,67,79]. Of the various protected areas, the national parks are the most people-oriented large, protected areas of Estonia and therefore well suited as research areas in this context. National parks in Estonia are largely affected by human activities, as a considerable proportion are located on private lands and the protection of traditional lifestyles and cultural heritage is included in the conservation objectives [74]. As of 1 January 2020, national parks accounted for 3% of the Estonian land territory (~15% of the total protected land territory) [78]. Slightly more than a fifth (21.3%) of protected areas in Estonia are located on private land, whereas 76.6% are located on state land. Most privately owned land (50.8%) is located in the limited management zone (IUCN cat. VI) [80]. Based on conservation objectives, Estonian national parks are zoned into the following categories: strict nature reserve (IUCN cat. Ia), wilderness conservation zone (IUCN cat. Ib), managed conservation zone (IUCN cat. IV), and limited management zone (IUCN cat. VI).

On average, protection zones in national parks are distributed as follows: strict nature reserves—1%, wilderness conservation zones—30%, managed conservation zones—26%, limited management zones—43% [80]. However, national parks differ greatly in their zoning and distribution (Figure 2). Therefore, a relatively large part of the territory of national parks allows certain human and economic activities, and in some places even encourages them (for example, the maintenance of semi-natural communities and the sustainable management of cultural landscapes).

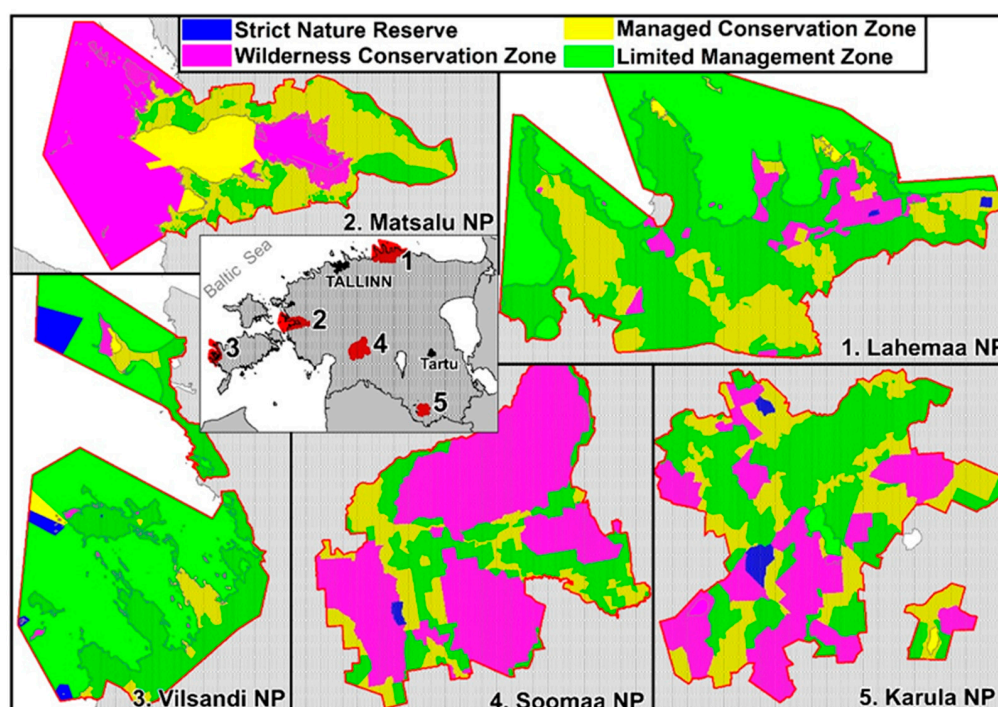


Figure 2. Locations and zoning of the study areas.

Involvement of local residents and stakeholders in the governance and management of the protected area is crucial for the efficiency and functioning of protected areas [58,60,61,63,81]. Therefore, in addition to statistical indicators and surveys, it is important to understand what local residents and stakeholders themselves think, and what their attitudes and opinions about conservation management and its socio-economic impact are. This research studied the views of locals in five national parks in Estonia: Lahemaa NP, Soomaa NP, Vilsandi NP, Karula NP, and Matsalu NP. All the observed national parks differ in terms of natural conditions, from island and marine areas to swampy areas and domed land-

scapes. They also differ in terms of socio-economic conditions, opportunities, and activities that have historically existed in all the national parks studied, which today are strongly influenced by accessibility and location in relation to urban centers. Thus, Lahemaa and Matsalu National Parks are most affected by good connection and the proximity of the capital Tallinn, and Karula National Park by its distance. However, Soomaa and Vilsandi National Parks are most affected by the overall difficult accessibility and natural conditions (Supplementary file S1).

2.3. Structured In-Depth Interviews

In order to collect qualitative information about the attitudes and opinions of local residents and stakeholders, a method of in-depth semi-structured interviews with local residents and stakeholders was used [21,31,50,82]. Interviews were accompanied by a questionnaire with 27 questions, covering a wide range of topics from governance and management practices to personal environmental behavior (sample questionnaire Supplementary file S2). When compiling the questionnaire, the topics of previous similar studies conducted in the same NPs were taken into account to provide comparability [68,69]. In total, 130 in-depth interviews were conducted, 32 in Lahemaa NP, 26 in Soomaa NP, 26 in Karula NP, 24 in Vilsandi NP, and 22 in Matsalu NP. Interviews were conducted until information saturation was reached and therefore the number of interviews varied by region. The duration of the interviews varied between 45 min and two hours, which provided sufficient time for explanations and discussion. In order to obtain as much relevant information and as many comments as possible from residents and stakeholders, all interviews were conducted on site through direct communication. In a few cases (for example, in the absence of informants from Estonia), the informants were interviewed by telephone and asked to fill in the questionnaire digitally with possible thorough comments. To avoid bias when collecting and processing the information, all interviews were conducted by the same persons in all the studied NPs. In order to improve accessibility to informants, interviews were conducted during the low season of tourism and agriculture (spring and autumn). In all areas under investigation, interviews were conducted during a seven-day period (Lahemaa April 2014, Soomaa August 2015, Vilsandi September 2015, Karula September 2018, Matsalu September 2019), supplemented with time spent conducting on-site observations and comparing desk study information with the real-life situation. As the most important changes and reforms in the nature conservation had taken place before the survey was carried out, no differences in the results were observed due to the time difference in the fieldwork. The aim was to involve the widest possible range of stakeholders who could have been most affected by the rules and restrictions in place in the protected area. To identify stakeholders and potential initial interviewees, national park management plans and engagement protocols were first examined, people who had previously worked in national park administrations and local people who were familiar through work or private contacts were contacted, and an internet search for relevant persons was conducted. On site, the snowball sampling method was used and interviewees were asked to recommend further contacts, especially from interest groups that were not incorporated into the initial sampling. Residents and stakeholders of national parks have been noted as a hard-to-reach group, for whom the snowball method is a widely used and pragmatic method [83–86]. Interest groups included permanent and temporary residents, landowners, workers and entrepreneurs in important fields (i.e., agriculture, forestry, tourism), representatives of non-governmental organizations, and officials from the Environmental Board, the State Forest Management Center, and the local government. In each region, a small control group was also included in the study, who were expected not to be significantly affected by the rules and restrictions (i.e., elderly people and holidaymakers) and/or not directly contributing to the achievement of conservation aims (i.e., maintenance of semi-natural habitats).

Questionnaires were completed by the informants themselves and at the same time they were asked to include as many explanations and comments as possible, which were recorded by the interviewers. For further analysis, the results of close-ended questions

were entered into an MS Excel data table and the results of open-ended questions were systematized and grouped content-wise in order to perform a comparative analysis between parks and with previous studies.

3. Results and Discussion

3.1. Relative Importance of Problems

The question concerning the importance of problems encountered in Estonia was answered by all respondents based on their assessment of the area of the national park. All respondents explained that Estonia's regions and problems are so varied that a single answer cannot be given, which is why they expressed their opinion about their home region.

Respondents ranked peripheralization as the most important problem encountered for residents of protected areas (32.8% of respondents), followed by social problems (29.9% of respondents) and unemployment (21.4% of respondents). The least important problems were considered to be criminality (35.6% of respondents) and inflation (31.1% of respondents), together with problems related to nature and environment conservation (31.3% ranked it as the second least and 13.4% as the least important problem) (Supplementary file S3).

Peripheralization is a process whereby economic, social, political, and image-related factors cause inequality in socio-spatial development, creating a divide between cores and peripheries [81–83]. These factors result in the emergence of a global, regional, and local core–periphery hierarchy, which manifests itself in the loss of population, jobs, and services in peripheral areas and their concentration in core areas. The focus on regional competitiveness, an approach shared by Estonian and EU regional policy, has not helped to reverse peripheralization of rural areas in Estonia and other Eastern European countries [82,84–86]. Additionally, it has been found that post-socialist rural areas with a previously state-protected and outdated economic model are highly susceptible to peripheralization [85].

Peripheralization was considered to be a greater problem in Karula than in other NPs, particularly Lahemaa and Soomaa NPs. In contrast, social problems were assessed as less important in Karula National Park (16% of respondents rated it as the most important problem, whereas in other national parks the result was between 28% and 38%) (Supplementary file S3). The situation in Lahemaa can be explained by the relative proximity to the capital (Tallinn ~50 km) and the regional center (~40 km away). However, this was a surprising result for Soomaa, as it has the most challenging natural, and to a lesser extent, geographical, characteristics (e.g., sparsely populated, limited services and infrastructure, distance from urban centers). In Soomaa, people have become accustomed to difficult conditions, or have come to live in the area because of them. There are very few young families in the area, for whom support services (such as schooling for children and public transport) would be important. Residents are accustomed to self-reliance, which is why peripheralization seems less critical for them.

Karula National Park is located furthest from Estonia's only real business and attraction center, the capital Tallinn. It is also located near the external border of Estonia and the European Union (the border between Estonia and the Russian Federation) and therefore it is peripheral in many ways. The socio-economic indicators of this region are generally among the lowest in Estonia [36,82], but Karula National Park ignores the trends specific to most areas in the vicinity of the eastern border of the European Union with its increasing and rejuvenating population, in-migration, and high entrepreneurial activity [36,85,86]. Due to the relatively young community and families with children, the need for services in Karula is the same as other areas with a similar profile. Although the local community has tried to solve many problems on its own, for example, children's educational activities are community-organized as a branch of a private school [87], there is still a fear of the future and possible peripheralization. It has been found that tourism can help to alleviate some of these problems, at least periodically [88,89], as is likely the case for Matsalu and Vilsandi, which are internationally recognized tourist destinations, but at the moment this does not provide relief in Karula National Park. A global study recently conducted by Souza et al. (2021) [90] found that the COVID-19 pandemic has generally reduced people's interest

in national parks, and that lockdown measures have drastically reduced the number of visits to the parks (especially foreign tourists). At the same time, it was found that in some national parks (for example, the ones in Finland) the number of visitors has increased due to the growth of domestic tourism. This suggests that the COVID-19 pandemic will have less, or rather, a positive, impact on the number of visitors to Karula National Park compared to the other national parks studied.

However, in addition to natural preconditions and local initiative, a leading institution (government) has a critical role to play in building and managing an effective and sustainable ecotourism system, e.g., by promoting the region, regulating tourism flows, and solving problematic issues (i.e., waste management) [91,92].

Comparing results with previous surveys conducted in the same national parks (Kartau, 1998; Niidumaa, 2009), the assessments have changed significantly. The importance of crime, environmental problems, and unemployment has decreased significantly. In the current study, unemployment was considered a less important problem in Karula and Matsalu than in other national parks, but at the same time problems related to nature and environment protection were assessed as more important than elsewhere (Supplementary file S3). Unemployment is generally no longer considered a priority, as opportunities for commuting and telework have improved significantly. Commuting is a common phenomenon in Estonia. Already by 2009, the share of commuters was estimated to be 28% of the population (380,000 people), and that figure is growing [82,93]. In addition to the increase in commuters, entrepreneurial activity and internet freedom have also increased significantly, bringing Estonia to the top compared with other European countries [94,95].

Physical crime has decreased across the country and is no longer considered a significant problem. By 2020, the total number of registered crimes in Estonia had decreased by more than half compared to 2003 [96]. In national parks, community attitudes have also helped to reduce crime. As one respondent in Karula said, *“I often give people work because then they have something to do and they don't go out stealing”*.

Problems related to nature and environmental protection have also become less important compared to previous studies in the NPs [68,69]. On the one hand, it is related to the reduction of crime and violations (incl. illegal logging, fly tipping, illegal fishing, poaching, etc.). On the other hand, problems have been reduced by more effective control and supervision, subsidy support schemes, and modern technical monitoring solutions (i.e., remote sensing and combined databases). As elsewhere in the world, the centralization of nature conservation and the abolition of protected-area administrations have led to a gradual distancing of nature protection from local conditions and the population [30,46,67,97,98]. As a result, respondents highlighted the moral obligation placed on the local population to engage in nature conservation and supervision as a matter of concern. Compared to other parks, problems related to nature and environmental conservation were considered more important in Karula and Matsalu National Parks (Supplementary file S3). During interviews, it was explained that this was due to increased pressure for deforestation and concerns about the preservation of the living environment. Recent studies have shown that deforestation has increased dramatically in several European countries in recent years, and Estonia is among the first in this respect [99]. Logging pressure has also reached high conservation value and protected areas, incl. state-owned forests [100–103]. Therefore, the NP residents' concerns and fears for deforestation are justified, especially given the fact that these are predominantly small landowners who, compared to large landowners, usually prefer sustainable forest use to economic interests and are not in favor of clear-cutting [104]. Clear-cutting is currently prohibited in all protection zones of Estonian national parks, but pressure from forestry companies to alleviate felling restrictions and allow clear-cutting is high [105].

3.2. Sufficiency of Protected Areas in Estonia and Satisfaction of Living in a NP

In response to the question concerning the number/extent of protected areas in Estonia, the majority of respondents (69%) stated that there are enough protected areas and an

almost equal number considered that there are too many (14%) or too few (13.9%). In terms of average estimates (enough), the results were relatively evenly distributed among the national parks. Karula, Matsalu, and Soomaa National Parks stand out separately, where a significant number of respondents considered that there are still too few protected areas. In Vilsandi and Lahemaa National Parks most respondents suggested that there are already quite a lot or too many protected areas in Estonia (Supplementary file S3).

Respondents were largely positive about living in a protected area. The vast majority of respondents found that they liked (38.5% of respondents) or rather liked (36.9% of respondents) that their place of residence was part of a protected area. A total of 12.3% of the respondents were neutral in this respect and 9.2% were rather negative. Few respondents (1.5%) expressed direct opposition (disliked) and the same number of respondents were unsure. The residents of Lahemaa National Park were less positive about living in a national park when compared with the residents of other NPs, with a quarter of respondents (25%) stating that they rather disliked their place of residence being part of a protected area (Supplementary file S3).

The results of this study showed that although there is little direct opposition to the creation of new protected areas, people are still cautious, as they feel that the State does not have the resources to manage existing ones. This is in line with the general view that the extent of protected areas alone does not guarantee their effectiveness or reduce the loss of biodiversity, and therefore more emphasis needs to be placed on governance and management practices [26,43,63]. The same result was obtained in an earlier study by Niidumaa (2009) [69], which coincided with the active creation of Natura 2000 network protected areas in Estonia, which has been widely criticized for hasty and sometimes unjustified selection of the areas [106].

3.3. Satisfaction with Nature Conservation Activities in Home Region

Almost two thirds of respondents rated nature conservation activities in their home region as rather good (46.5% of the respondents) or good (11.3% of the respondents). Almost a quarter of the respondents (23.3%) rated it as satisfactory. A total of 14% of the respondents rated it rather poor and 3.1% of the respondents rated it as poor. There were only a few respondents (1.6%) who could not take a position on this issue.

Compared to other parks, there were fewer positive and more negative assessments concerning nature conservation activities in Lahemaa National Park (Supplementary file S3), which was explained by the high proportion of abandoned land, shrub encroachment, poor condition of forests, and disregard for local conditions. The share of positive and rather positive assessments in Soomaa National Park was significantly higher than in other parks, in particular due to wild natural conditions and the small proportion of private land, which results in less pressure on the natural environment and fewer conflicts between nature conservation and local people.

The results were also compared with previous studies (Table 1). In Karula, there was a sharp increase in satisfaction between the first and second surveys, and a decline for the third survey. In Matsalu, satisfaction was consistently high during the first and second surveys, but like in Karula, dropped significantly by the third survey reported in this study. The decline in satisfaction was explained by the abolition of national park administrations and the subsequent pressure on the environment and local socio-economic conditions. Nonetheless, in Karula and Matsalu National Parks, no one considered nature conservation activities to be poor, and compared to the first survey, the share of negative assessments had decreased significantly.

Although the share of negative assessments in Lahemaa was highest among the studied national parks, a decrease in negative assessments and a slight increase in positive assessments compared with previous studies was noted (Table 1).

Table 1. Assessment of nature conservation activities in home region, results by park, grouped between three assessments (Kartau, 1998; Niidumaa, 2009; Järv et al., 2021).

Assessment, % of Resp. -s	Poor			Rather Poor			Unsure/Neutral			Rather Good			Good		
	Kartau	Niidumaa	Järv et al.	Kartau	Niidumaa	Järv et al.	Kartau	Niidumaa	Järv et al.	Kartau	Niidumaa	Järv et al.	Kartau	Niidumaa	Järv et al.
Vilsandi	0	3	4.2	19	15	12.5	17	23	29.1	56	53	45.8	8	6	8.3
Matsalu	2	0	0	19	12	9.5	7	10	28.6	65	68	33.3	7	10	28.6
Karula	13	4	0	27	7	15.4	15	9	23.1	38	66	50	7	14	11.5
Soomaa	0	0	3.8	3	12.5	7.7	28	12.5	15.4	55	53	65.4	14	22	7.7
Lahemaa	16	5	6.3	22	39	21.9	28	22	28.1	31	32	37.5	3	2	6.3

Compared to a previous survey [69], the share of positive evaluations concerning nature protection activities decreased in all national parks except Lahemaa, and especially in Karula and Matsalu. In Karula, the introduction of subsidies for nature conservation occurred between the two previous surveys [68,69], which may explain the increase in satisfaction at the time of the second survey. In Matsalu, support for the maintenance of semi-natural areas was paid earlier (1996) [107], which explains the limited change between the first and second surveys. In addition to the restoration of cultural landscapes and semi-natural communities, subsidies also acted as a catalyst for the revitalization of (traditional) agricultural activities and the improvement of socio-economic conditions, thereby contributing to the achievement of conservation goals and improved efficiency of the protected area [30,67]. The positive impact of support schemes and compensation on the preservation of natural values and the improvement of the local socio-economic situation has also been noted in other countries, including Tanzania, Vietnam, and China [108–111]. The main reason for the decline in satisfaction with nature conservation activities was the centralization of nature protection, the abolition of national park administrations, and the consequent distancing from local conditions. As a result, respondents were not confident that their habitual living environment and conservation values of the NP would be preserved.

3.4. Preferences Regarding Management of NPs

In addition to the assessments of nature conservation activities, respondents were asked about their preferences for the management responsibility of NPs. Overwhelmingly, 70.1% of the respondents considered that NPs should be managed by the state. This was followed by joint management by state and local government (13.4%) and by local government only (11%). There was little support for NGO management (and its various combinations).

Examining the results of national parks separately, the highest trust in the state was noted in Karula (88.5%) and the lowest in Lahemaa (50%). In Lahemaa, there was a significant number of respondents who were in favor of NP management by local government (12.5%) or joint management by the local government and the state (34.4%). Trust in NGOs was highest in Matsalu and Soomaa (Supplementary file S3).

Compared to a previous survey (Niidumaa, 2009) [69], the results were broadly similar, except in Lahemaa National Park, where support for the state as the manager of the protected area decreased from 69% to 50%. In Karula, on the other hand, support for the state rose from 75% to 88.5%.

Management of NPs by government agencies was largely supported by respondents, because it was believed to have a lower risk of corruption and sufficient competence and access to resources to ensure the sustainability of the protected area and the achievement of conservation objectives. In all national parks, the majority of respondents stressed that in spite of trust in governmental management, polycentric governance and management should be favored and NP administrations restored. Thus, respondent's views on this issue are in line with general trends and recommendations in the world regarding governance principles [9,43,45,52,112]. In a centralized system, decision-making takes place at a high level and far away, which, among other things, makes it difficult for local people to exchange relevant information with the manager of the PA and vice versa [113,114]. It also means that the manager of the protected area is not as familiar with local conditions as with a multilevel governance system [56]. This can have both positive and negative effects on local people. When attention from and intervention by the manager of the protected area is expected (such as the pressure on deforestation discussed earlier), the distance is seen as negative. If attention from and intervention by the manager of the protected area causes problems or inconveniences, then distancing is seen as a rather positive phenomenon (i.e., for the construction requirements in Lahemaa).

3.5. Respondents' Awareness about Rules and Restrictions

In general, respondents reported a good awareness of the rules and restrictions that directly affect them. Restrictions that do not directly affect their activities were generally poorly known of. It was found that people involved in PA-associated activities (e.g., agriculture, forestry, environmental work) knew the rules and restrictions better than others. More than half of respondents (57%) rated their knowledge rather good or good, nearly a third (32%) as average, and about 10% as rather poor or poor.

Looking at the national parks separately, respondents in Matsalu rated their knowledge the highest and in Lahemaa the lowest (Supplementary file S3).

Compared to previous studies, the number of people who considered their knowledge poor or rather poor decreased in all NPs. (Table 2). With the addition of the "average" option in the most recent survey, estimates had moved to the center, and estimates in the "average" category were rather high. In all national parks, the number of people who rated their knowledge as good also increased.

Interviews and results show that people's awareness of the rules and restrictions in place had improved. Improved access to information and the wider use of modern ICT channels and tools (Internet, social networks, etc.) played a role in this. As has been noted in the USA, Germany, Austria, Switzerland, and Greece, ICT enables all parties to easily and quickly transmit, search for, and find information and increases engagement [115–117]. It has been argued that the Internet facilitates civic engagement of already informed and motivated people, but may not change the involvement of those who are passive and have not sought opportunities for inclusion [117]. Therefore, the use of the Internet and modern ICT channels alone may not be justified, and in some cases direct communication and traditional methods work better, as shown by recent studies in Germany, DR Congo, and Tanzania [118–120]. The present study revealed that personalized and targeted channels and physical media such as the official newspaper of Karula NP ("Tarupettäi," issued since 1999) and physical meetings are still a very important method of disseminating information in national parks [105,121,122]. In the course of the previous survey, the Lahemaa National Park Administration emphasized the need to restore the publication of the Lahemaa National Park newspaper, as the Internet alone was not considered effective enough to communicate with locals [69].

The results of the current research also illustrate the importance of dialogue between the manager of the protected area and residents and the need to involve local people to ensure their awareness and PA effectiveness [31,45,46]. Niidumaa (2009) [69] found that NP administrations rated the relationship with the local population and their knowledge about rules and restrictions as good in Karula, Matsalu, Soomaa, and Vilsandi National Park and rather poor in Lahemaa National Park. The results of current research show that these assessments are reflected and have been carried on for a long time in the attitudes of the local population. During the previous survey [69], satisfaction with the work of the manager of the protected area, trust in the State as the manager of the protected area, and awareness of rules and restrictions was lowest in Lahemaa National Park compared to other national parks. At the time of the current study, it had dropped significantly.

Table 2. Respondents' awareness about rules and restrictions in force in NPs (Kartau, 1998; Niidumaa, 2009; Järv et al., 2021).

Assessment, % of Re- spondents	Poor			Rather Poor			Average	Rather Good			Good			Unsure		
	Kartau	Niidumaa	Järv et al.	Kartau	Niidumaa	Järv et al.	Järv et al.	Kartau	Niidumaa	Järv et al.	Kartau	Niidumaa	Järv et al.	Kartau	Niidumaa	Järv et al.
Vilsandi	3	0	4.2	25	38	8.3	25	61	44	41.7	8	15	20.8	3	3	0
Matsalu	2	0	0	15	25	0	23.8	67	57.5	61.9	11	12.5	14.3	5	5	0
Karula	2	0	0	28	16	7.7	38.5	55	66	26.9	11	14	26.9	4	4	0
Soomaa	0	0	0	52	16	0	36	38	62.5	40	7	12.5	20	3	9	4
Lahemaa	7	2	0	28	37	25	34.4	56	54	21.9	9	5	18.8	0	2	0

3.6. Respondents' Perception about Restrictions of NPs

The vast majority of respondents (81%) thought that there were enough restrictions, and only 6% of respondents thought that there were not enough restrictions. A total of 13% of the respondents did not take a position on this issue, predominantly those with limited exposure to restrictions (e.g., pensioners, short-term residents) or officials who did not want to take a position on the issue.

Of the restrictions listed (Supplementary file S3), respondents stated that the greatest effects were from forestry, real estate, and land-use restrictions (~20% considered restrictions positive, ~40% negative, and another 40% neutral; very few people were unsure). Restrictions on fishing were also notable (~25% of respondents rated them as negative, a ~20% as positive, and more than 50% did not feel the impact of the restrictions). The impact of restrictions on the use of mineral fertilizers and pesticides was assessed as positive by ~30%, neutral by ~60%, and negative and unsure by <10%.

The most negative responses on restrictions on land use were recorded in Vilsandi (50%) and Lahemaa (43.8%) national parks (as one respondent in Lahemaa said, *“On the one hand, the restrictions are good, because real estate developments cannot be undertaken (the neighbouring field is owned by a real estate company, but nothing can be done.) But at the same time, we cannot do anything ourselves either”*). In other national parks, negative evaluations were ~30%. Karula National Park clearly differed from other NPs in terms of positive assessments (34.6%) (Supplementary file S3). Restrictions on land use and real estate were closely linked and restrictions related to real estate were mostly understood by respondents as restrictions related to construction activities. Restrictions related to real estate were largely considered negative in Lahemaa National Park (65.6% considered the impact negative and only 3.1% positive) (Supplementary file S3). A somewhat less but still significant number of respondents also considered the impact of restrictions to be negative in Vilsandi and Matsalu National Parks (37.5% and 36.4%, respectively). The most positive attitude to restrictions on real estate development was in Karula National Park (53.8% considered the impact positive, and only 7.7% negative).

In addition to land use and real estate restrictions, restrictions to forestry activities were considered to have the greatest impact in all national parks. Negative views on forestry restrictions were between 30 and 40% in all parks. High proportions of neutral views were noted in the Matsalu and Lahemaa National Parks (~50%), as well as the lowest proportion of positive evaluations. Restrictions were considered most positive in Karula National Park (~30% of respondents) (Supplementary file S3).

Respondents were most bothered by restrictions that they considered inappropriate, not sufficiently justified, or that the reason for them had disappeared (e.g., as one respondent in Karula said, *“Restricted areas should be reviewed and their feasibility assessed, for example, the nest of a black stork has long since decayed in one place and there are no more storks there. At least mushrooming could be allowed in this area”*). The same problem was highlighted in a recent study in Lithuania, which suggested that such areas should be periodically inspected and, if necessary, exempted from restrictions [104]. It was repeatedly pointed out by respondents in all studied national parks that the problem was not with the abundance or lack of restrictions, but rather with the inability to control compliance with existing restrictions, also highlighted by Niidumaa (2009) and Thanakasem et Al. (2018) [69,123]. In particular, violations committed by NP visitors and the resulting relative inequality were noted. It has been found that compliance with the rules is better when coercive intervention methods are used, but the effect ceases when control is reduced; therefore, voluntary compliance should be strived for [124]. Restrictions and rules are generally respected by locals; however, it was noted that visitors commit violations either unknowingly or intentionally, because it is generally known that control is weak and there is a high probability that punishment will not follow (as one respondent in Matsalu said, *“There are enough restrictions, but they are not monitored. The problem is that when SUVs are driven over marshes, tracks are made, the landowner or tenant is blamed, and subsidies can be*

reduced or land taken away altogether. I should not do the work of the police and the environmental inspectorate, and I am not really entitled to do that” According to one respondent in Karula, “In the area of the national park, cars are often driven by the lakes and elsewhere, where you are not allowed to drive. The police do not deal with it and the Environmental Board and the Inspectorate do not have the resources to control it”). Ferretti-Gallon et al. (2021) suggested [21] that in many cases, the problem lies not with an intentional violation, but is caused by insufficient facilities and infrastructure, such as the lack of/insufficiently maintained toilets or rubbish bins (according to one respondent in Soomaa, “There is a problem with tourists excrement and campfires. There are no people or tools in the National Park to control it” Another respondent in Lahemaa said, “There should be significantly more public rubbish bins - to avoid throwing rubbish into the forest. The question of who should pay for it. How to get money from visitors in transit to cover these costs?”). As in several other studies [125,126], it was found that the main reason was the lack of funds and manpower to fulfil the control and regulatory function, which in the current study was attributed by respondents to the centralization of nature conservation.

In all national parks, there was a largely neutral attitude towards restrictions on the use of mineral fertilizers and pesticides (Supplementary file S3), predominantly because they did not engage in agriculture themselves or did so organically. At the same time, almost a third of respondents rated the impact as positive, explaining that it provides them with a cleaner and healthier living environment and allows them or others to engage in organic production. People who assessed the impact of the restrictions as negative explained their choice with a view to completely banning all use of mineral fertilizers and pesticides in the national park, so they considered the restrictions to be too lenient. A study carried out in the Poloniny National Park in Slovakia showed that local people want to maintain a healthy living environment and landscape, with environmentally friendly small businesses being seen as a key factor, whether in the form of agriculture or biodiversity conservation [127]. A recent study in Argentina showed that increased demand for land and its purchase or lease by large companies puts local people and small businesses in a difficult position and can lead to environmental problems, significant changes in the landscape, and local socio-economic conditions [100]. In the current study, it was found that the possibility of using mineral fertilizers and pesticides may increase large companies’ interest in the land and lead to changes in traditional land use and cultivated crops. In Germany, it has been found that a change in conventional land use and crops could lead to higher land prices, strong competition, changes in landscape structure, and conflicts [128].

Apart from a few neutral assessments, views on hunting were divided in two: Some would like to ban it in principle and others considered the restrictions too strict (Supplementary file S3). In general, hunting restrictions were mainly viewed by people in the tourism sector and nature conservation as too lenient, whereas restrictions were considered too strict by livestock farmers, foresters, and local hunters. A recent study in Germany showed a similar divergence of stakeholder views on this issue [129]. Hunting was found to have both positive and negative effects. Depending on the intensity of hunting, methods, and hunting culture, this can have a negative impact on wildlife fauna and nature tourism [130]. On the other hand, legal community-based hunting has been found to have a number of positive effects, such as preventing illegal hunting and improving the viability of game populations, and providing livelihoods [131]. Dolman et al. (2021) suggested sustainable hunting as a compromise and one possible solution [132], which is what has been practiced in Estonia after the establishment of Hunting Councils including users of the hunting region, landowners, and representatives of the Environmental Board [133].

Restrictions on fishing were noted as being almost twice as unpopular as hunting restrictions (~25% of respondents) (Supplementary file S3), mainly as fishing permits are limited in number and available to anyone, regardless of location (As one respondent in Lahemaa said, “Fishing permits should still be distributed as a matter of priority to local residents” Another respondent in Lahemaa said, “Permanent residents do not receive a fishing permit while some people from the capital do”). Obtaining or not obtaining a fishing permit often depends

on the speed of one's computer and Internet connection, due to the first come, first served nature of applications after the opening date for applications, and as a result, it is common for locals not to receive a fishing permit, due to slower rural Internet speeds. This problem was particularly acute in Matsalu (over 50% of respondents considered the impact of fishing restrictions to be negative) and Vilsandi National Parks, but also in Lahemaa. Fishing restrictions in Matsalu and Vilsandi were also considered to be the most disturbing factor during the previous Niidumaa survey in 2009, and also in Matsalu during the 1998 Kartau survey. As studies in Thailand and the UK have shown, fishing restrictions in marine and coastal protected areas often lead to dissatisfaction and conflict with locals [134,135]. As Hogg et al. (2019) found, the establishment of protected areas can create a situation where some stakeholders feel positively and some negatively affected by restrictions, and win-win situations are exceptions [136]. As found by Jones et al. (2020), protected areas in Europe affect stakeholders differently and often have a strong negative effect on locals concerning social equity [33]. The German experience has shown that, in such situations, local people should be given priority where possible and, if necessary, special rights should be considered [120].

The system of renting and maintaining state-owned land in national parks resulted in misunderstanding and negative attitudes towards land-use restrictions. Land tenants and caretakers are mostly chosen through large-scale public procurement, where local people and businesses are not able to compete with large companies. Prior to nature conservation reforms and the abolition of administrations in 2006, locals were preferred for maintenance contracts and leasing of land. In both Vilsandi and Lahemaa, changes in land use were noted as problematic. For example, shrub encroachment on coastal meadows becomes classified as Natura 2000 forest in terms of tree height and canopy connectivity, although this results in the loss of coastal meadow ecosystem services [137]. The granting of contracts to large companies for maintenance and farming includes elements of land grabbing, often criticized for endangering the livelihoods of local people, deteriorating socio-economic conditions, and causing environmental degradation [100,138]. Land grabbing is understood as a process where local actors lose control of the land they have formerly been able to use, and their land use is restricted either directly or indirectly through interventions by outside actors [139–141]. Many locals are dependent upon the use of state land, as also observed in recent studies in Argentina and Laos [100,142]. As studies from Poland, Slovenia, and Germany have shown, national parks should contribute more to local development and socioeconomic conditions [120,143,144], which could be achieved by allowing local people to farm and maintain state land in national parks.

In all national parks, it was argued by some respondents that the sale of land (at least state-owned) to forestry companies, real estate companies, and non-rural businesses should be banned. Some respondents felt that conservation objectives would be much easier to achieve if the share of state-owned land were higher (purchase of land owned by forestry and real estate companies by the state). It has been found that the sale of land by large landowners (including the state) puts pressure on small and medium-sized landowners, many of whom struggle to withstand pressure to sell their land [128,138,140]. As found by other studies, the concentration of land in the hands of large companies reduces the involvement and opportunities for local people to participate in decision-making processes and reduces their opportunities to rent and use land (i.e., formerly state-owned land) [142,145]. Pressure on landowners to sell their land was also described in the current study in Vilsandi and Karula National Parks. In Estonia, landowners can, under certain conditions, apply to the state to purchase a property with nature conservation restrictions [74]. Such applications are rather rare (1730 applications in 20 years [79]) and transactions are more often made via private bodies. To ensure improved conservation status and avoid conflicts, the state could consider changing the conditions of purchasing protected land.

In addition to natural value, national parks also have a rich cultural and architectural heritage, which has led to restrictions on the construction and renovation of buildings.

Restrictions vary from one national park to another, with the strictest in Lahemaa National Park, where greater emphasis has been placed on preserving and restoring cultural heritage compared to other national parks. In terms of cultural heritage, Lahemaa is the most studied national park in Estonia, and many government studies have resulted in direct or indirect regulatory effects being implemented. Decisions are made at a high level and are often not discussed with local people. For some locals, however, it is primarily their home, and was long before the creation of the national park. They want to make improvements to their complexes and equip them with modern amenities. However, in the case of limited resources, it is not always possible to find a compromise between the interests of maintaining cultural heritage and property owners. Many Lahemaa respondents felt that restrictions on construction were too severe and largely not financially supported, requiring the use of some costly materials and methods. Similar problems were noted in other national parks, but in a slightly more modest form (as one respondent in Karula said, *“It is positive that construction restrictions and rules are not too detailed, as in Lahemaa.”* A respondent in Vilsandi said, *“At the moment, there is no legal basis to demand any specific construction features and in this regard there has been no criticism of the Environmental Board”*). Requirements for the construction and renovation of dwellings are often extended to production buildings (such as barns), which puts businesses in a somewhat difficult position (One respondent in Lahemaa said, *“Trying to apply the same requirements to production buildings as residential ones. This is not practical, for example, I am missing about a meter in height to fit a tractor in the barn”*). As a result, most production buildings built during the Soviet period have been re-used, which is positive given the overall appearance of the region. However, it must be noted that restrictions on construction activities have a significant economic impact on both the local population and businesses, and without state support, they are placed at a disadvantage compared to areas outside the protected area. A long-term study in Yorkshire Dales National Park in England [146] showed that people are primarily guided by practical goals when renovating buildings. Although the payment of subsidies contributed to renovation activity, there was little interest in it due to insufficient compensation, especially if buildings did not serve a practical purpose [146]. Buildings in national parks and their renovation (use of certain materials) could be regarded as a common good of society, and recent research has suggested that this should be subsidized and that compensation should be adequate [109,111]. Ferraro and Kiss (2002) found that direct payments are often a more efficient method than indirect compensation measures, and although the impact of direct payments on environmental behavior has been questioned, it has been found that direct payments are often cheaper for the donor, more efficient, and that local people receive a much higher share of it [147].

3.7. Consideration of the Interests of Locals in Management Plans and Protection Rules

On average, 54% of respondents in all NPs considered that management plans and protection rules did not take sufficient account of the interests of permanent residents. One-fifth of respondents (20%) considered that the interests of permanent residents had been sufficiently considered and 26% did not take a position on the issue.

The most positive views were recorded in Karula National Park, where 42.3% of the respondents thought that the interests of permanent residents had been sufficiently considered. In Matsalu National Park, the corresponding indicator was substantially lower (4.5% of the respondents), in Vilsandi and Soomaa National Parks it was around 20%, and in Lahemaa National Park it was 12.5% (Supplementary file S3).

In Matsalu, Soomaa, and Lahemaa National Parks, ~60% of respondents found that the interests of permanent residents had not been sufficiently considered, with a corresponding figure of 50% and 42.3% for Vilsandi and Karula, respectively. In Vilsandi, Matsalu, and Lahemaa National Parks, ~30% of the respondents did not take a position on the issue, and in Soomaa National Park and Karula National Park it was 20% and ~15%, respectively.

In addition to preserving the natural environment, the protection aims of national parks in Estonia also include the protection of traditional lifestyles and cultural her-

itage [105,122,148–150]. In national parks, management plans and protection rules have a significant impact on local socio-economic conditions [13,30,67], so it is important to understand the extent to which they consider the interests of permanent residents. The avoidance of differentiation was considered to be the biggest problem in all national parks, i.e., the rules and restrictions arising from regulations and strategic documents apply equally to everyone and no distinctions are made for permanent residents. This can severely hamper the local sense of justice (e.g., in the allotment of fishing permits), has significant socio-economic implications (e.g., public procurement for landscape management contracts, lack of differences in timber use, construction requirements), and reduces motivation (NPs are a common good, but the burden is on locals). Respondents noted that in the past, national park administrations had made some exceptions for locals, but due to the reform and centralization of nature protection in the country, the possibilities for this had significantly decreased.

There has been a paradigm shift towards mixed, decentralized, and stakeholder-inclusive conservation management practices in recent decades [12,42,43,48,49]. However, many studies found that local people are not sufficiently involved or their interests taken into account in conservation planning [33,98,143,144,151]. Disregard for the interests of local people and avoidance of differentiation by managers of protected areas has been a major problem in other national parks in Europe, i.e., in Germany, Slovenia, and Norway [128,144,151]. To alleviate the problem, decision-making should be brought closer to residents of national parks and made more stable and more human, and financial resources should be directed to the management of protected areas.

3.8. Freedom of Action and Opportunities

An average of 33.1% of respondents from all NPs considered that living in a national park did not affect their freedom of action or opportunities. Almost a third of respondents considered the effect to be positive (10.8%) or rather positive (20.8%). Just under a third rated the impact as negative (6.9%) or rather negative (21.5%). The remaining 6.9% of respondents felt unsure about their views on the issue.

However, when looking at national parks separately, differences were noted. The most positive attitude was in Soomaa National Park, where half of the respondents (50%) found that living in the national park has a positive or rather positive effect on their freedom of action and opportunities (Supplementary file S3). The number of negative assessments there was remarkably small (negative and rather negative <10%). There were also evaluations that were more positive than average in Karula National Park (11.5% positive and 30.8% rather positive).

Most negative ratings were given in Matsalu NP, where the impact of the national park on freedom of action and opportunities was considered negative by 13.6% and rather negative by 31.8% of the respondents. The share of negative assessments was also higher than average in Lahemaa National Park (9.4% negative and 28.1% rather negative). Compared to the other parks, more respondents in Lahemaa National Park stated that living in the national park did not affect their freedom of action or opportunities (40.6% of respondents) (Supplementary file S3).

To compare the results with a previous study in the NPs (Niidumaa, 2009), it was necessary to group the results in a simplified way into positive, negative, and neutral (Table 3). The results show that in Vilsandi, Karula, and Soomaa National Parks there was an increase in the number of people who assessed the impact of the national park on freedom of action and opportunities as positive. In Matsalu National Park, on the other hand, the share of negative assessments increased significantly. This was explained by the lack of expected opportunities (such as obtaining fishing permits) and uncertainty about the future (such as the difficulty of obtaining landscape management contracts). Responses in Lahemaa National Park remained broadly the same.

Table 3. National park effect on freedom of action and opportunities, by park (Niidumaa, 2009; Järv et al., 2021).

Assessment, % of Resp.-s	Negatively, Rather Negatively		Neutral		Positively, Rather Positively		Unsure
	Niidumaa	Järv et al.	Niidumaa	Järv et al.	Niidumaa	Järv et al.	
Vilsandi	67	25	30	29.2	3	29.2	16.7
Matsalu	15	45.5	59	31.8	26	22.7	0
Karula	29	26.9	51	26.9	20	42.3	3.8
Soomaa	38	7.7	31	34.6	31	50	7.7
Lahemaa	34	37.5	44	40.6	22	15.5	6.3

The impact of living in the national park on freedom of action and opportunities was considered positive primarily by people for whom the national park and its values provided income (e.g., organic farmers, receivers of landscape maintenance subsidies) or the opportunity to engage in desired activities (nature tourism).

The impact of living in the national park was assessed as neutral primarily by people who lived or stayed in the national park, without the NP affecting their day-to-day activities (e.g., commuters, part-time residents, non-nature-related occupations). The impact of the national park was rated negatively by people whose main activities were directly affected by the rules and restrictions arising from the national park (fishing, various forms of business) or whose income or use of personal property was restricted (for example, land, forest, and some property owners). Although the freedom of action of land and forest owners in studied national parks is not comparable to that of those outside protected areas, it is still less restricted than in national parks in Russia, Peru, and Finland [67,92,152], where freedom of action and opportunities are strongly restricted by the protected area manager, including the establishment and use of infrastructure. Opportunities in Estonian national parks are greater because of the relatively large proportion of privately owned lands and farms where it is possible to operate and, under certain conditions, erect infrastructure. However, the problems and attitudes are very similar to national parks that are partly located on private land, such as in Poland and Latvia. [153,154]. In Estonia, as in Poland and Latvia, private lands are included in protected areas involuntarily and there are no effective compensation mechanisms, which is why landowners are most dissatisfied with the lack of decision-making power over private land and control by external authorities [153,154].

3.9. NP Effect on the Price of Real Estate

An average of more than two thirds of respondents from all NPs considered that the location in the protected area affected the price of real estate. Only 10% of respondents felt that there was no impact and 17.7% of respondents did not take a position on the issue, citing a lack of interest in real estate prices, as they had no plans to sell or buy real estate. Half of the respondents found that being located in a national park has a rather positive (39.2%) or a positive (10.8%) effect on real estate prices, 17.7% of respondents found it to be rather negative, and 4.6% negative.

Karula National Park clearly differed from the other NPs, where the majority of respondents found that the location in the NP affects the price of real estate rather positively (42.3%) or positively (30.8%). Few respondents rated the impact of the national park in Karula as neutral or rather negative, and no one thought that the impact would be negative. In Soomaa National Park, 11.5% considered the effect rather negative and 3.8% negative, with 26.9% not taking a position on the issue (Supplementary file S3).

In Lahemaa National Park, the impact on real estate prices was also considered positive (46.9%) or rather positive (6.3%) by more than half of respondents. The impact was considered most negative in Vilsandi National Park, where 29.2% of the respondents considered the impact rather negative and 12.5% negative.

Compared to the results of previous studies [68,69], the number of people who did not have an opinion on this issue (Unsure) decreased in all NPs (Table 4). The largest change was noted in Karula National Park, where predominantly negative assessments were replaced by predominantly positive assessments. In Vilsandi and Matsalu National Parks, the share of negative evaluations increased. Compared to the last two surveys, assessments

in Soomaa and Lahemaa National Parks showed little change, although there was an increase in the number of positive responses compared to the report by Kartau (1998).

Improved mobility and available financial resources have made it possible to acquire holiday homes or residences further away from the capital or regional centers. More active construction activities in the vicinity of protected areas have also been observed in studies conducted in the USA [155,156], and it has been suggested that this trend is likely to intensify further in the future [157]. The introduction of subsidies related to nature conservation and the restoration of valuable cultural landscapes have motivated more people to engage in the rural economy in Estonian national parks (particularly Karula and Matsalu). In addition to agriculture, nature tourism has also become an important source of income, especially in unique natural areas such as Soomaa (fifth season and floods), and Matsalu and Vilsandi (internationally important bird areas). As only pre-existing building areas are allowed to be inhabited in national parks, opportunities for living and conducting business are physically limited. The growth in demand and the limited number of possible places have increased the value of households (and plots), although farmland and forest prices have decreased because of restrictions. Similar results have been noted in other countries. A study in Australia by Heagney et al. (2015) found that location in a protected area raised the price of households [158]; Abelairas-Etxebarria and Astorkiza (2012) found that the location in a PA had a negative influence on the price of farmland in Spain [159]; and Brukas et al.'s (2018) study showed that protected area status lowered the price of forestland in Lithuania [104].

Table 4. National park effect on real estate prices, by park (Kartau, 1998; Niidumaa, 2009; Järv et al., 2021).

Assessment, % of Re- spondents	Negatively			Rather Negatively			Neutral	Rather Positively			Positively			Unsure		
	Kartau	Niidumaa	Järv et al.	Kartau	Niidumaa	Järv et al.	Järv et al.	Kartau	Niidumaa	Järv et al.	Kartau	Niidumaa	Järv et al.	Kartau	Niidumaa	Järv et al.
Vilsandi	8	0	12.5	25	21	29.2	12.5	17	23.5	33.3	11	23.5	4.2	36	32	8.3
Matsalu	0	3	4.5	13	8	22.7	9.1	30	15	36.4	7	13	4.5	50	61	22.7
Karula	24.5	7	0	38	14	3.8	3.8	7.5	9	42.3	0	16	30.8	30	54	19.2
Soomaa	10	6.5	3.8	31	9	11.5	15.4	7	25	34.6	3	6.5	7.7	48	53	26.9
Lahemaa	0	0	3.1	28	15	21.9	9.4	22	40	46.9	16	7	6.3	34	38	12.5

3.10. Preferred Compensation Measures

When asked how disadvantages caused by restrictions should be compensated, respondents from all national parks except Karula stated that they would prefer a reduction in restrictions for permanent residents (Supplementary file S3). In Karula, monetary compensation was preferred. The second option selected was compensatory measures (i.e., road construction and other investments in infrastructure) in Vilsandi, Matsalu, and Karula. In Soomaa and Lahemaa, the need for infrastructure improvements was less important, because the infrastructure in Lahemaa is good and it is simply not practical in Soomaa due to the natural conditions, whereas the creation of additional earning opportunities was ranked as second most important. The least popular options in the national parks were an overall reduction in restrictions and a consultancy service (ranked 5th or 6th out of six). The only exception was Karula National Park, where the consultancy service was ranked 4th.

Respondents to this study highlighted that a reduction in restrictions for permanent residents would be the preferred compensation method for the disadvantages of living in a PA. Locals felt that they do not receive any special treatment compared to others, although they are inadvertently forced to contribute more to the achievement of conservation objectives (i.e., building requirements for which there are generally no support mechanisms). An effective dialogue with the protected area manager and, if necessary, differentiations, are expected (i.e., land management and lease agreements, fishing permits). Several studies have noted that local people are not sufficiently involved in conservation planning [33,98,143,144,151], and their interests are disregarded in other national parks in Europe [128,144,151]. The need to compensate for disadvantages due to restrictions has also been highlighted in recent studies in Uruguay, India, Poland, Lithuania, China, and Vietnam [104,109,111,153,160–162]. Compensation mechanisms can be both monetary and non-monetary; both have been criticized and praised [147,160,161]. Similar to the results of the current study, the opportunity to participate in the decision-making process and receive fair treatment has also been a priority for local people in other national parks, such as in Slovenia and Poland [144,153]. As Wu et al. (2020) also pointed out, for effective conservation management the principles of equal public burden should be followed [111], which may require fair compensation mechanisms and special conditions for locals, as also pointed out by Ruschkowski and Mayer (2011) [120].

3.11. Sufficiency and Effectiveness of Subsidies

In Karula National Park, 38.5% of the respondents considered the subsidy system to be sufficient. In other studied national parks, the same indicator was between 6 and 15% (Supplementary file S3). In Karula, 27% of respondents felt that subsidies were insufficient; in other NPs it varied between 53 and 63%. In all NPs, about one third (~30%) of respondents were unsure about this issue, predominantly those not utilizing subsidies.

In Karula National Park, the positive attitude to the current system of subsidies was explained by respondents regarding the effectiveness of support measures. Respondents admitted that before the introduction of the support system, arable land and semi-natural communities had been largely abandoned and overgrown. The subsidy system attracted the first entrepreneurs to the area and created a snowball effect—as a result of about 20 years of practice, it is now almost impossible to find an abandoned or unrestored plot of land in the national park. Having personally contributed to the restoration of the national park area (which was possible due to the support measures) and seeing the results of their work on a daily basis, the importance of support measures was highly appreciated by Karula residents.

Previous research has shown that the payment of subsidies plays a key role in ensuring a stable socio-economic situation in national parks and in preserving valuable semi-natural habitats and cultural landscapes [13,30,67]. In general, it was found by respondents that from a conservation perspective the support system can be considered effective, but not

sufficient. Insufficient compensation for protected land and disproportionate restrictions for landowners were a pervasive concern in all studied national parks (as one respondent in Vilsandi said, “*The state does not sufficiently appreciate (compensate) that people’s land is included in protected areas. For example, firewood cannot be made normally, gravel cannot be taken for road improvement. Fishing and movement restrictions are not reasonable for locals. Locals should be distinguished*”). Recent studies have shown that lacking or insufficient support in protected areas is a pervasive problem in several other countries, including Lithuania, Poland, Slovenia, and the UK [104,144,146,153]. In Estonia, the situation has recently improved in this respect. For example, compensation for loss of income for Natura 2000 forest areas was introduced in 2015 [163], but at the same time it does not cover the loss of income for previous years (which can be decades or even a century). As the level of subsidies has remained relatively unchanged for a long time, the recent requirement to collect income tax from subsidies was considered unfair. Applying for grants involves bureaucracy, which can be difficult or overwhelming for many locals, as studies in Slovakia and Slovenia have shown [127,144]. In this survey, respondents repeatedly emphasized the need for help and support to deal with bureaucracy and documentation (e.g., a helpline or advice bureau).

3.12. Disturbing Factors in the Landscape

A previous study (Niidumaa, 2009 [69]) noted that the most disturbing factor in the landscapes in all Estonian national parks was the abandonment and overgrowth of agricultural land. In the present study, it was considered the most disturbing factor in Vilsandi and Lahemaa National Parks (Supplementary file S3). In Karula and Matsalu National Parks, this was considered to be the least important problem during the current study. In general, problems were found to be difficult to prioritize because some of the listed problems do not occur or were of minor importance depending on the characteristics of the NP. For example, waste thrown in the environment meant mostly waste left by visitors, rather than massive dumping of waste into the forest (this problem has largely disappeared due to organized waste transport and increased environmental awareness). The least significant problem in both the previous and the present study was considered to be inappropriate buildings, which refers to the effectiveness of the requirement to build/renovate existing building sites and to follow certain architectural constraints.

3.13. Willingness to Contribute to Landscape Maintenance

The willingness of residents of NPs to maintain the landscape is extremely high—93.8% of respondents were ready to maintain landscapes under certain circumstances. Only 3.9% of respondents were unwilling to do so on the grounds of old age or poor health. One fifth of respondents (20.2%) stated they would be willing to maintain landscapes if it were profitable, almost a third said they would agree to do it if costs were covered (29.5%), and almost half (44.2%) were ready to maintain the landscapes in any case. In the previous study (Niidumaa, 2009), a similar question was asked: “Would residents be willing to take care of the landscapes of their home region if support were paid?” According to Niidumaa (2009), the willingness to maintain the landscapes was high in all national parks: 93% of the respondents in Karula, 88% in Vilsandi, 82% in Matsalu, 81% in Soomaa, and 70% in Lahemaa [69].

There were no major differences in the results of the national parks in terms of overall willingness, but there are some differences in terms of circumstances (Supplementary file S3). The proportion of respondents who were ready to take care of the landscapes in any case was highest in Karula National Park (53.8%) and lowest in Matsalu National Park (31.8%). The expectation of benefit was lowest in Karula National Park (11.5%); in other parks it was around 20%. Expectations for covered expenditures were highest in Matsalu (36.4%) and Lahemaa (35.5%), and lowest in Karula and Soomaa (both 23.1%).

In the case of national parks, the importance of local involvement in conservation management is well discussed [1,12,33,41,42,45,48,49,98], including in landscape management.

Valuable cultural landscapes and semi-natural communities have developed over centuries as a co-existence of anthropogenic and natural factors [164–166] rich in biodiversity and considered natural heritage in Europe [165,167,168]. All studied NPs are rich in such landscapes, i.e., wooded meadows (EU Hab. Dir. Code 6530), wooded pastures (9070), coastal meadows (1630), Nordic alvars (6280), and boreal heaths (4030), the preservation of which requires continued human activity [13,169,170]. Interviews revealed that a very large number of people are willing to take part in one-off activities free of charge, including paying for it themselves (for example, using personal equipment) or by limiting themselves to covering only direct costs. The reason for this is the willingness to contribute to creating a better living environment. Some are willing to do it when it is profitable, although this requires investment and specialization, which presupposes a stable system based on specific local conditions. In recent years, the competitiveness and future confidence of local businesses (whose family incomes and livelihoods depend on the availability of maintenance and rental contracts) have declined significantly due to the centralization of NP management and the application of market economy principles in nature conservation. However, as previous studies have shown [30,67], local people are a highly motivated resource that is not always sufficiently valued and engaged.

3.14. Willingness to Pay (WTP) for Nature Conservation

People's willingness to pay (WTP) for nature conservation was lowest in Vilsandi National Park (25% agreed; 66.6% opposed). In other national parks, 40–46.2% of respondents were willing to pay, but a similar number or more respondents were opposed to it (36.4–58.1%) (Supplementary file S3). In addition to Vilsandi NP, opposition to higher prices was high in the Lahemaa (58.1%) and Soomaa National Parks (56% of respondents) (Table 5).

The Jacobsen and Hanley (2008) global study on how income influences the willingness to pay (WTP) for biodiversity conservation found that income levels and gross domestic product (GDP) have important implications for WTP for nature conservation. It was found that the higher the income and GDP, the higher the WTP for nature conservation [171]. However, in addition to income, WTP has been found to depend on many other non-income factors, such as respondents' place of residence (rural or urban), distance of the object supported (close or remote), respondents' level of education, connection to the object (locals or outsiders; landowners or residents), and many other factors [171–173]. In the current study, people were found to be willing to make additional financial expenditures for nature conservation in their home region if they could have a say in where and how their money was used. People usually invest in nature conservation based on personal preferences (such as charismatic species or favorite habitats), so the results of this study are similar to those noted in other countries [173–175]. As studies in Spain and India have shown, the reasons for refusal in the current study were also very similar to other national parks: The management of biodiversity in the park was seen as the sole responsibility of the state and central government, the park was seen as a public good and should therefore be funded accordingly, and the rest just opposed new payments [173,175].

Table 5. Willingness to pay for nature conservation in home region, results by park (Kartau, 1998; Niidumaa, 2009; Järv et al., 2021).

Assessment, % of Resp. -s	No			Rather Not			Rather Yes			Yes			Unsure		
	Kartau	Niidumaa	Järv et al.	Kartau	Niidumaa	Järv et al.	Kartau	Niidumaa	Järv et al.	Kartau	Niidumaa	Järv et al.	Kartau	Niidumaa	Järv et al.
Vilsandi	0	6	45.8	31	33	20.8	33	9	12.5	8	3	12.5	28	49	8.3
Matsalu	6	8	27.3	9	26	9.1	57	26	31.8	0	0	9.1	28	40	22.7
Karula	23	5	19.2	28	23	23.1	21	28	30.8	4	2	15.4	24	42	11.5
Soomaa	21	0	28	24	21	28	34	32	24	0	4	16	21	43	4
Lahemaa	0	2	35.5	8	25	22.6	41	25	32.3	0	5	9.7	50	43	0

4. Conclusions

Since regaining independence, the Estonian nature conservation system has undergone substantial changes from extremely centralized and top-down governance (during the Soviet regime), to participatory and polycentric management (in the 1990s), and then to gradually centralized again (since the early 2000s). The present study found that conservation status has an important effect on local socio-economic conditions. Largely depending on governance and management practices, its effects can be both positive (e.g., higher housing prices, opportunities for nature tourism, or subsidies paid) and negative (e.g., agricultural and forest land prices, restrictions, higher costs, inequality). In general, people are satisfied that their place of residence is part of a protected area, especially in the hope that the conservation status will ensure the preservation of the natural living environment. In Estonia, national parks are largely located on private land, which makes it necessary and justified to take into account the interests of local residents and landowners more than usual, which, however, has not been sufficiently practiced. The majority of respondents found that management plans and protection rules have not sufficiently taken into account the interests of permanent residents. The avoidance of differentiation has severely hampered the local sense of justice, has significant socio-economic implications, and reduces motivation. National parks can be considered a common good, and for effective conservation management the principles of equal public burden are expected to be followed. Private lands are included in protected areas involuntarily, so there is a need for fair and adequate compensation mechanisms. In particular, financial compensation and reduction of restrictions for permanent residents were seen as possible compensatory measures. People were most disturbed by the restrictions that they considered inappropriate, were not sufficiently justified, or that the reason for them had disappeared. However, the most important problem turned out to be the control of compliance with restrictions, for which, according to the respondents, the protected area manager does not have sufficient resources. However, it was found that the centralization of nature conservation and the abolition of protected area administrations have led to a gradual distancing of nature conservation from local conditions and the population, causing several problems (such as economic insecurity) and concern about the preservation of the living environment (such as pressure by large companies to manage forests).

Broadly, the biggest problems were considered to be peripheralization and its related social problems. Although national parks can alleviate peripheralization to some extent, it is periodical and applies only to areas with good accessibility and high tourism potential. It was found that in addition to natural preconditions and local initiatives, committed management and regulation by NP managers is needed to alleviate disadvantages arising from conservation status and restrictions and to tackle socio-economic challenges. However, positive effects on local social conditions were observed in all national parks, especially in the form of immigration of younger, entrepreneurial, and educated people. It was also found that problems related to nature and environment conservation have gradually decreased due to the reduction in crime and legislative violations, introduction of subsidies, landscape restoration and maintenance work, and increased public awareness. Awareness and satisfaction with nature conservation activities were higher in the national parks where efforts were made to involve locals and there was effective dialogue between the protected area manager and residents. At the same time, results showed that building cooperation is a long-term process, and it is more effective if local people are involved in activities and the preconditions and opportunities for earning income are created (i.e., subsidies for landscape restoration and maintenance). Payment of subsidies has proven to have a key role in ensuring a stable socio-economic situation in national parks and in preserving valuable semi-natural habitats and cultural landscapes. In general, it was found by respondents that from a conservation perspective, the support system can be considered effective but not economically viable for applicants (such as subsidies for protected forests). The willingness of residents of NPs to maintain the landscape was extremely high—93.8%

of respondents were ready to maintain landscapes under certain circumstances. This means that local people are a highly motivated resource that is not always sufficiently valued and engaged. In recent years, the competitiveness and future confidence of local businesses (whose family incomes and livelihoods depend on the availability of maintenance and rental contracts) have declined significantly due to the centralization of NP management and the application of market economy principles in nature conservation. To alleviate this problem, decision-making should be brought closer to the residents of national parks, made more stable and more human, and financial resources should be directed to the management of protected areas.

Supplementary Materials: The following are available online at <https://www.mdpi.com/article/10.3390/land10111257/s1>, Supplementary file S1: Overview of the study areas; Supplementary file S2: Sample questionnaire in English; Supplementary file S3: Overview of the results.

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