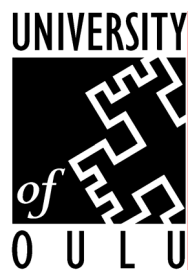


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**FOREST OWNERS' ATTITUDES TO AND PREFERENCES FOR
VOLUNTARY CONSERVATION
– PRELIMINARY RESULTS OF A SURVEY**



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Forest Owners' Attitudes to and Preferences for Voluntary Conservation – Preliminary Results of a Survey

Abstract

Wide consensus exists that there is a need to extend forest conservation for maintaining biodiversity in Southern Finland. These forests are largely privately owned indicating that mandatory approaches, such as land takings, may not be feasible without strong opposition of forest owners. Therefore, the voluntary-based protection measures, e.g. trading in natural values (TNV), are planned to be used to meet this aim. In TNV, forest owners produce biodiversity services in their lands and receive an incentive payment. So far, there is not so much research done on forest owners' attitudes to these measures.

This paper provides preliminary results of a survey concerning forest owners' attitudes to voluntary conservation of forests, and more specifically to TNV. According to the results of this survey, most of the forest owners (about 60%) consider the current conservation level suitable, and for about one fourth even the current level is excessively high. Also, most of the forest owners probably would not offer part of their forest to the TNV in the future even if possible. In addition, the TNV and other voluntary-based protection measures have not changed the attitudes of most of the forest owners to the environmental protection. Thus, extending the conservation network with voluntary agreements can face difficulties due to the attitudes of forest owners. The willingness to participate in voluntary incentive-based instruments is so far fairly low, although there seem to be clear differences among forest owners in different areas. However, many forest owners do not know TNV or other voluntary-based protection measures well enough, and thus, with more information the willingness to participate may increase.

Key words: Biodiversity, Forest management, Protected areas, Voluntary agreements

1 Introduction

There is a need to increase forest protection in Finland, because the current conservation network situates mainly in northern part of the country (Hanski 2000). About 17 per cent of the forests of Northern Finland are protected (Virkkala et al. 2000). However, many of the nationally important habitats and endangered species only occur in Southern Finland, where about 1.6 per cent of forests are strictly protected and about 2.5 per cent are under protection of some degree (Lehtonen et al. 2003). In Southern Finland, forests are mainly privately owned. Therefore, it may be difficult to apply traditional mandatory conservation programs there. To increase the protection of the privately owned forests, the opportunities of forest owners to participate in the decision making process have to be improved (Tikka 2003).

The need to protect privately owned forests in Southern Finland is acknowledged among the policy makers. In year 2000, the Finnish government set a forest protection committee for Southern Finland to create a proposal for an agenda with an action plan and financing method (Etelä-Suomen, Oulun läänin...2002). In the action plan, different measures and new ways to secure the biodiversity are presented (METSÖ-ohjelma). These include incentive-based policy instruments, such as trading in natural values (TNV) and competitive tendering. Now these voluntary-based protection measures are being tested in practice to figure out the best ways to increase the protection in private forests.

TNV involves conservation by fixed-term contracts agreed between landowners and the authority that represent Finnish government under a given budget constraint. According to these contracts forest owners produce biodiversity services in their lands and receive an incentive payment. The aim of TNV is to create markets for biodiversity services in a manner that has a broad acceptance in society and in particularly among forest owners. Thus, not only being politically feasible TNV may also be cost-effective (Juutinen 2005). The ownership remains in the hands of the original land owner and she/he is free to use land for other purposes than those restricted by the contract. When the contract expires the use of land continues in a way the land owner decides.

The TNV pilot project started in 2003 in Satakunta region, South-West Finland. So far contracts have been made for 75 targets with 61 forest owners (Gustafsson and Nummi 2004, Gustafsson and Nummi 2005). The target consists of a compact area which can include several forest stands. Contracts have been made for 98 forest stands. Because some forest owners have made two contracts, the total number of contracts is 66. The most of the contracts have been made for a period of ten years and they forbid forest harvesting. Moreover, there are 18 contracts that include a regime to increase the natural values of the target. The total area under protection is 552 hectares. In total 2,077 hectares have been offered to TNV. One third of this area has not yet been evaluated. The payment has varied between 20-300 €/ha/y. The average payment has been 170 €/ha/y and 161 €/ha/y in 2003 and 2004, respectively. These figures do not include targets that do not fulfil the external biological criteria for TNV (see Etelä-Suomen metsien...2003).

Before the new methods can be widely brought in to play, it is important to get information concerning the forest owners' attitudes toward these kinds of voluntary measures in order to estimate whether the method would work and be effective from both ecological and economical points of view. Therefore a questionnaire was sent to a sample of forest owners in two regions in Southern Finland, Häme and Etelä-Savo. They have not had a possibility to participate in the TNV pilot project and perhaps had not yet even got any information of these protection measures. The motive to choose these two areas in Southern Finland was to examine differences in the demographic characteristics and attitudes of the forest owners in these areas. Moreover, the forest owners in Häme may have more information about the TNV than those in Etelä-Savo since Häme is located rather close to Satakunta where the pilot project has been implemented but Etelä-Savo is farther away. This may result in marked regional differences in the attitudes by forest owners.

There are some surveys of Finnish forest owners' attitudes completed before (Juutinen et al. 2005, Horne et al. 2004, Karppinen et al. 2002), and the results of this survey are compared to previous surveys in the discussion part of this paper.

2 Data and methods

The questionnaire was sent to 1,800 forest owners. Half of them lived in Häme, western part of Southern Finland. The other half consisted of forest owners in Etelä-Savo, South-Eastern part of Finland.

The addresses of the forest owners were received from the Central Union of Agricultural Producers and Forest Owners. Questionnaires were sent first in the end of November 2004, reminders in December and a second set of questionnaires again in January 2005 to those, who had not yet responded. Of the original 1,800 questionnaires mailed out, 39 questionnaires were undeliverable, so the final sample consisted of 1,761 forest owners. Of the returned questionnaires, 870 were usable, which gives a response rate of 49.4 per cent (or 48.3 per cent of the entire sample of 1,800).

The questionnaire consisted of six parts. The forest owners' attitudes to the natural values and environmental protection were asked first. The next questions were about the forest property and its management. In third part, the objectives of forest ownership were asked. Then the method of TNV was explained and the respondents were asked if they had some information of the method in beforehand. They were also asked, whether these kind of voluntary-based methods have changed their attitude to forest protection and would they be willing to participate in TNV. Moreover, the importance of different aspects when the respondents would consider taking part in TNV was asked. In fifth part were the questions about the determination of a compensation claim: which aspect influences the compensation claim most, and how large would the respondent's compensation claim be of a well defined stand. If they could not state the claim we asked what was the reason for it. Finally there were the questions of the demographic characteristics of the respondents. There was also space for comments on the last page of the questionnaire.

The results of this paper are represented by frequencies and means. Also, the statistically significant differences (by significance level of 5.0 per cent) between the respondents of the two regions are represented. Thus, if there is a statistical difference between the regions, it is stated, otherwise the answers are discussed as one sample. The differences in distributions of the answers between the forest owners in Häme and Etelä-Savo are statistically tested by the χ^2 -test (see Everitt 1977 for more detailed

description of the statistical testing). In most cases the tested table of frequencies was of form 2x5 (e.g., the respondents from Häme versus Etelä-Savo and five choices of importance from “very important” to “not important at all”). In this case, the test parameter follows the χ^2 -distribution with four degrees of freedom. In addition, the most influential cell frequencies causing the statistical difference were traced by calculating the adjusted residual for each cell. If the frequencies are independent from each other, the adjusted residuals follow the normal distribution with mean 0 and standard deviation 1. If the absolute value of the adjusted residual is more than 1.96, the observed frequency deviates statistically significantly from expected with the probability $p < 0.05$. In some cases the tested table of frequencies was of form 2x2 (e.g., the respondents from Häme versus Etelä-Savo and the answer of “yes” or “no”). In these cases the Fisher’s exact test was used. It reports the probability to randomly get the observed result.

3 Description of respondents

It is important to know the demographic characteristics of the respondents because these determine the attitudes and preferences of forest owner for the most part. Moreover, the demographic characteristics can be used to assess the representativeness of this sample in comparison with the previous studies.

Nearly 80 per cent of the respondents owned the forest property, about 5 per cent were owners' spouses or family members. About 14 per cent were heirs of the forest property or members of an association which owned the forest property. Of the respondents 75.1 per cent were males, 24.5 per cent females. The respondents were 59 years old on average, and due to this fairly high age of the respondents the most common occupation of them was a pensioner (41.9%). Nearly 20 per cent announced to be agricultural/forestry entrepreneurs. However, some answered to have two professions (agricultural/forestry entrepreneur and something else) and if they are counted as agricultural/forestry entrepreneurs the share of this class increases to 28.0 per cent. The percentage of salary earners was 29.0 per cent, about 7 per cent were entrepreneurs, 0.9 per cent were students and 1.6 per cent were unemployed or others. The respondents were also asked of the household's annual net income without the harvesting income. The most common income classes were 20,000-30,000 € (20.3%) and 15,000-20,000 € (18.2%).

Nearly 60 per cent of the respondents lived in the countryside, about 20 per cent in small towns with under 20,000 inhabitants, 15.6 per cent in towns with 20,000-100,000 inhabitants and 6.6 per cent in towns with more than 100,000 inhabitants. Nearly half of the respondents had only basic education, less than one fifth had vocational education and about one third had upper vocational education or academic education. The respondents were also asked of their education in forestry. About half answered not to have any education in forestry. Nearly one third announced to have completed some courses on forestry issues. More than 10 per cent had a degree in the field of forestry and 6.9 per cent had studies of forestry included in their degree.

The respondents of the two areas, Häme and Etelä-Savo, differ in their demographic characteristics to some extent. Of the respondents from Häme, 12.6 per cent live in towns with more than 100,000 inhabitants, whilst only 1.1 per cent of the respondents

from Etelä-Savo. 64.2 per cent of the respondents from Etelä-Savo and 50.4 per cent of the respondents from Häme live in the countryside. The respondents living in Häme had generally higher education level and they were more often in senior or leading position in their profession (11.3%) than those from Etelä-Savo (6.5%). In addition, the respondents from Häme had greater incomes in general. The respondents from Häme more often had a degree in the field of forestry (13.2%) than those of Etelä-Savo (8.7%), but the respondents from Etelä-Savo more often had studies of forestry included in their degree (9.2%) compared to the respondents from Häme (4.5%).

To figure out the respondents' roles as forest owners they were asked some background information about their forest property. Most of the respondents had inherited the forest property (41.3%) or bought it from the parents or relatives (37.6%). About 10 per cent had bought the forest property from free markets. About one fourth of all respondents owned sites also apart the main forest holding. On average the respondents' main forest holding consisted of 55 hectares of land, of which on average 40 hectares were woodland. In Etelä-Savo, the proportion of woodland (84.0%) was greater than in Häme (62.6%). In Häme, 33.9 per cent of the respondents had valid (made in 1994 or later) forestry plan for their forest property, in Etelä-Savo 48.4 per cent. When the respondents were asked the year of the last timber selling, the average answer was in year 1991 in Häme and 1997 in Etelä-Savo. Also, more than 20 per cent of the respondents from Häme had not sold timber within the last five (2000-2004) years, whilst in Etelä-Savo the amount was about 15 per cent. On average the respondents had sold 770 m³ of timber per forest property within the last five years in Häme and 875 m³ in Etelä-Savo.

The frequency of the silvicultural measures reflects to some extent the activity of a forest owner as a wood producer. The most common silvicultural measure was the harvesting of firewood (81.1%). Also the treatment of tree plantation and young forest (77.2%) and the planting or seeding forest (62.1%) were broadly used silvicultural measures.

The carrying out of the silvicultural measures was more common in Etelä-Savo than in Häme (see Fig. 1). Especially the harvesting of firewood etc., the treatment of tree plantation and young forest and the planting or seeding forest were more common measures in Etelä-Savo than in Häme. However, the forest roads were built or improved more often in Häme.

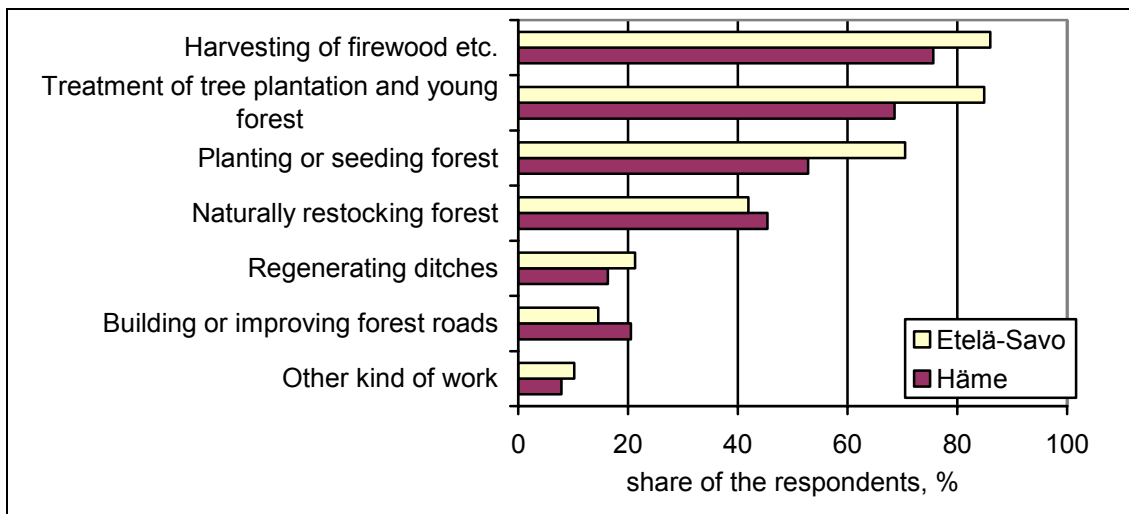


Figure 1. The silvicultural measures carried out on the forest properties within the last five years (2000-2004).

4 Results

4.1 Attitudes to environmental protection

The forest owners were asked to estimate their attitudes to the environmental protection. Of all respondents about 60 per cent answered that current conservation level is suitable, but almost one fourth announced that forests are already protected to a too large extent and the protection should be reduced (see Fig. 2). A minority of the forest owners opted for increasing the level of conservation.

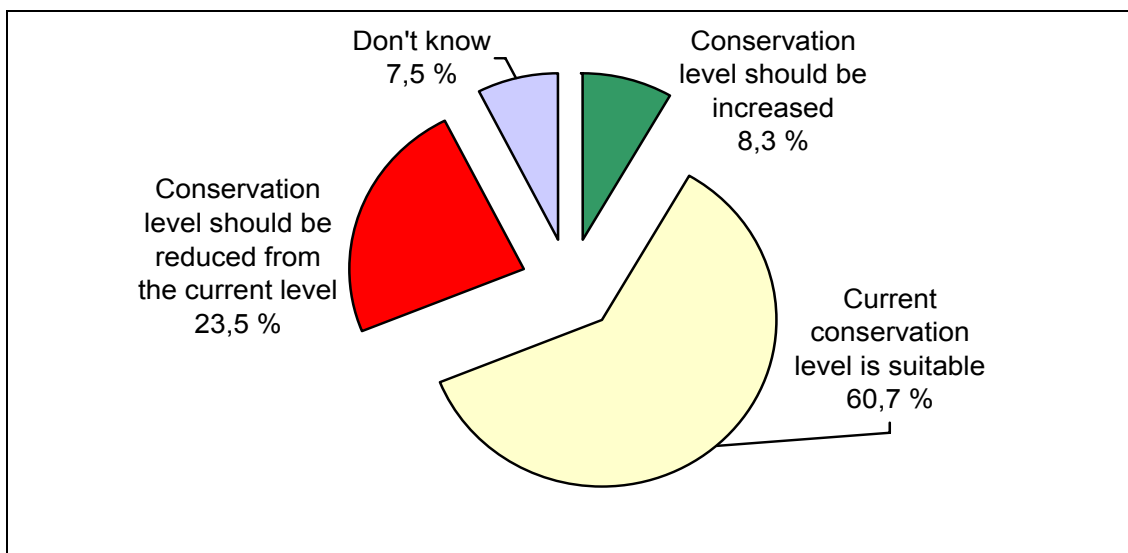


Figure 2. The attitudes to the environmental protection (shares of answers, all respondents).

There were differences between the two areas: the respondents from Häme said more often (11.3%) that the conservation level should be increased from the current level than those of the region of Etelä-Savo (5.5%). On the other hand, the respondents from the region of Etelä-Savo answered more often (64.1%) that the current conservation level is suitable than the respondents from the region of Häme (57.0%).

The method of TNV was explained to the forest owners and then they were asked whether these kinds of voluntary-based protection measures have changed their attitudes to the environmental protection in general. The most common answer (48.4%) was that the voluntary-based protection measures have not changed forest owners' attitudes (see

Fig. 3). However, about 30 per cent answered that their attitudes to environmental protection have changed to be more positive due to the voluntary-based protection measures.

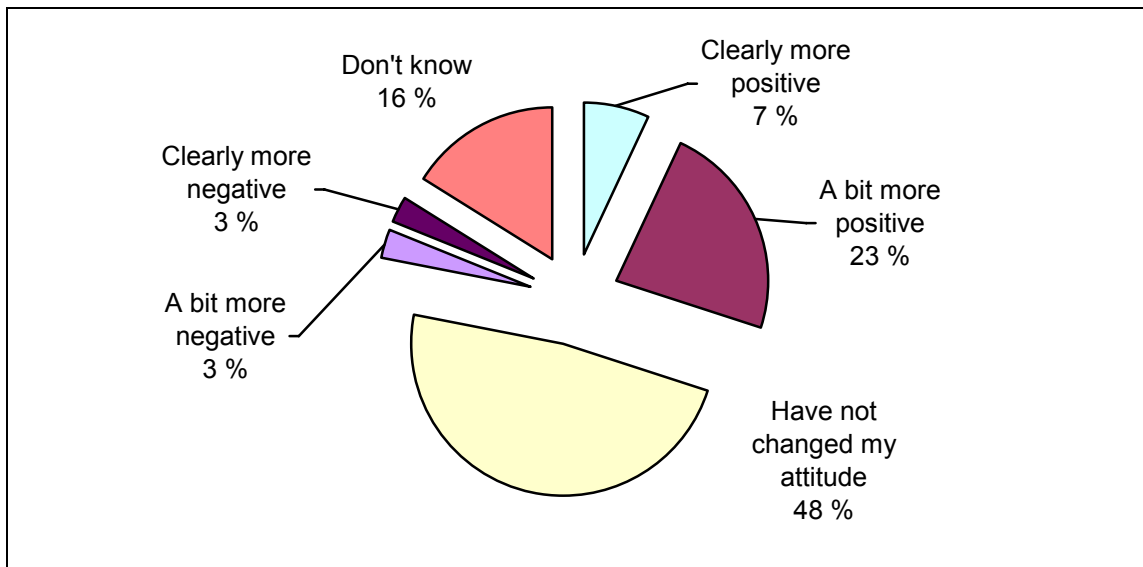


Figure 3. Have the TNV and other voluntary-based protection measures changed your attitude to environmental protection? (Shares of answers, all respondents.)

4.2 Forest protection in respondents' own forests

In surveys, the respondents can quite easily hide their true opinions. However, in reporting their acts they tend to be more exact. Therefore the forest owners were asked if they had protected areas in their own forests. The most common way (23.4%) (see Fig. 4) to protect own forest was to conserve key biotopes which are ordered to be protected by forest law (see Metsälain erityisen... 2004 for more information about key biotopes). Also, the voluntary protection measures, such as managing forests paying special attention to natural values and leaving some areas aside of harvesting, are quite frequently used means of protection. Of all respondents 21.8 per cent announced to manage forests paying special attention to the natural values.

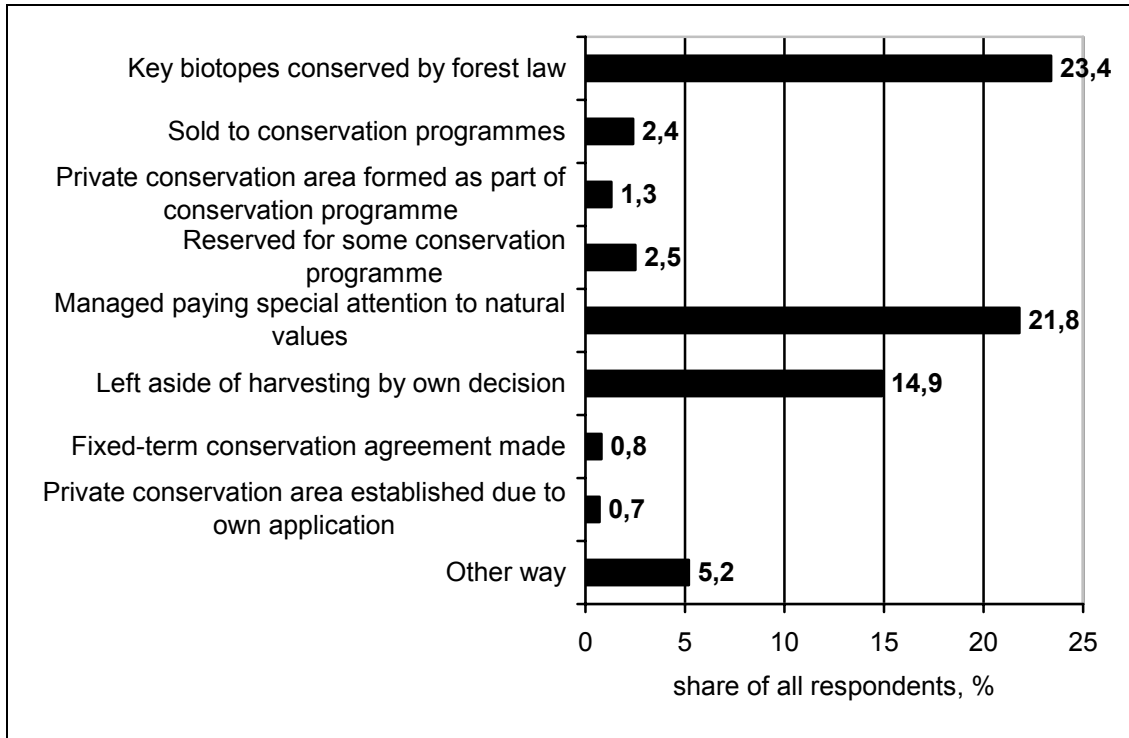


Figure 4. Conservation in the respondents' own forests by different protection measures.

The conserving key biotopes was clearly more common in the region of Etelä-Savo, where nearly 30 per cent of the forest owners announced to have done so. The corresponding percentage in the region of Häme was about 20 per cent.

4.3 Objectives of forest ownership

The forest owners were asked to estimate how important they considered different aspects of forest ownership. The six different aspects of forest ownership were: 1) recreational use and hobbies such as hunting etc.; 2) wood production and the harvesting income; 3) nature and scenery of the forest; 4) financial security from owning forest; 5) sentimental values related to forest ownership; and 6) forest as an investment.

Of all respondents about 70 per cent considered recreational use and hobbies to be very important or important objective to own forest. Even more than 70 per cent said the sentimental values related to forest ownership to be very important or important objective as well. About half estimated the nature and the scenery of forest to be very important or important aspect, but only about 45 per cent answered that considering

forest as an investment is very important or important aspect of forest ownership. The forest owners in Etelä-Savo considered the aspects of wood production and the harvesting income, and financial security from forest owning to be more important than the forest owners in Häme (see Fig. 5).

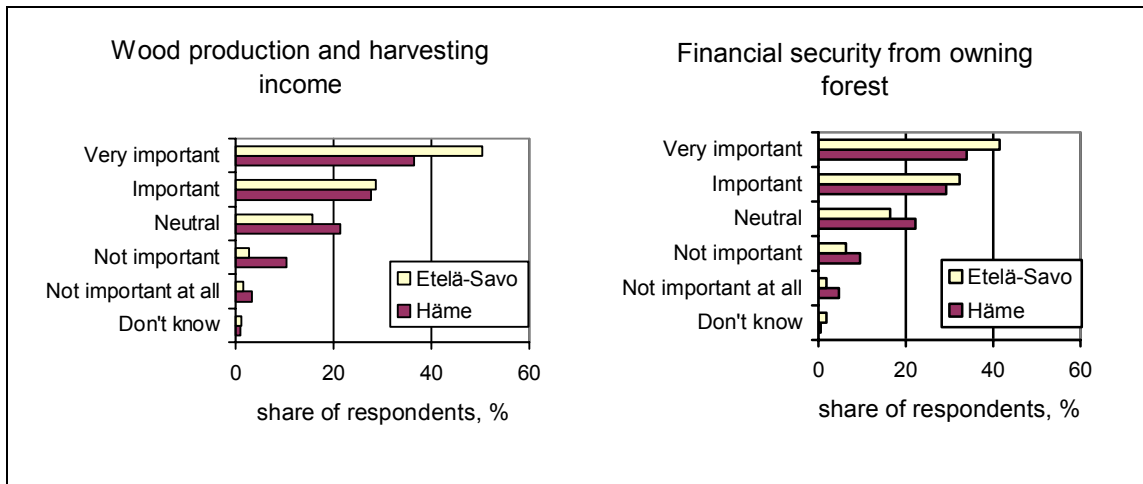


Figure 5. The importance of wood production and harvesting income, and financial security from owning forest to forest owners in Häme and Etelä-Savo.

4.4 Aspects of protection method

The forest owners were asked how well they knew the method of TNV or other voluntary-based means of conservation. Only 4.2 per cent claimed to know them very well, 33.9 per cent said to know them to some extent, as much as 39.2 per cent knew little of them and 22.7 per cent did not know them at all.

Another question concerned the received information. The respondents were asked if they before had got information about the TNV or other voluntary-based means of conservation. Here as much as 29.9 per cent answered not to have had any information. Nearly 40 per cent had received little information and nearly 30 per cent had received some information. Only 2.1 per cent claimed to have received a lot of information.

As the role of information is vital for the TNV to success and get the approval of the forest owners, also the sources of information were asked. The most common sources of information were the national newspapers, radio and TV-channels (44.4%) (see Fig. 6). The association of forest owners was also an important source of information (30.5%). The magazine of the producers' organisation was more often the source of information for the forest owners in Häme (24.4%) than for the forest owners in Etelä-Savo (18.7%).

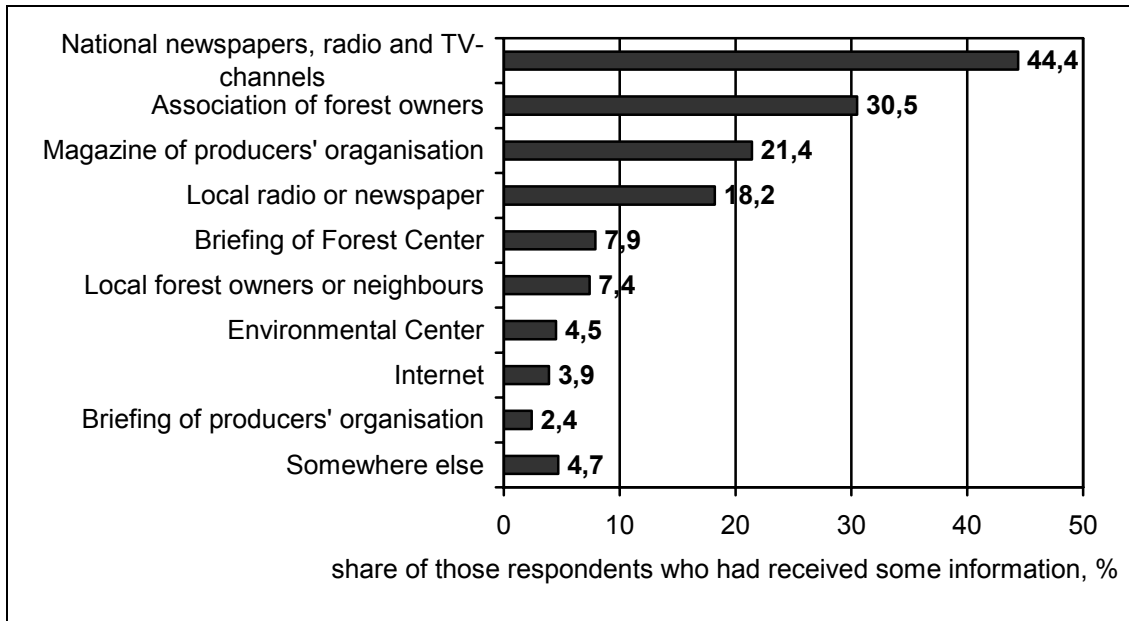


Figure 6. The sources of information about TNV or other voluntary-based means of conservation.

When the forest owners were asked if they would be willing to offer part of their forest to the TNV in future if it would be possible, more than half answered they would probably not or definitely not offer their property (see Fig. 7). However, one fourth of the respondents were willing to offer their forests to TNV. As much as about one fifth did not know would they offer or not.

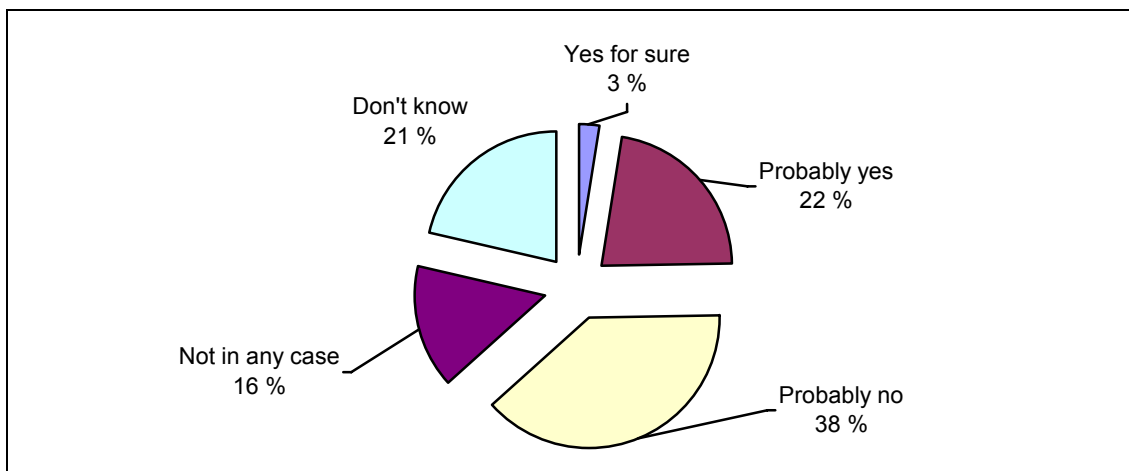


Figure 7. The willingness of the respondents to offer part of their forest property to the TNV (shares of answers, all respondents).

Again there were differences between the respondents of the two areas. The forest owners in Häme were more often ready to offer part of their forest property for sure to the TNV (3.9%). In the region of Etelä-Savo the corresponding number was only 1.3 per cent. Also the respondents from Etelä-Savo stated more often that they would not want to participate in TNV in any case (18.4%) than the respondents from Häme (12.3%).

The respondents were also asked what aspects they would value to be important if they would consider participating in TNV. The frequencies of the answers are reported in Fig. 8. More than 65 per cent considered the options of “Human’s responsibility to protect nature” and “Conserving nature for future generations” to be very important or important aspects in this respect. The least important aspect seems to be “The possible economic profit from producing natural values”, which was chosen by 18.8 per cent of the respondents to be “not important at all”.

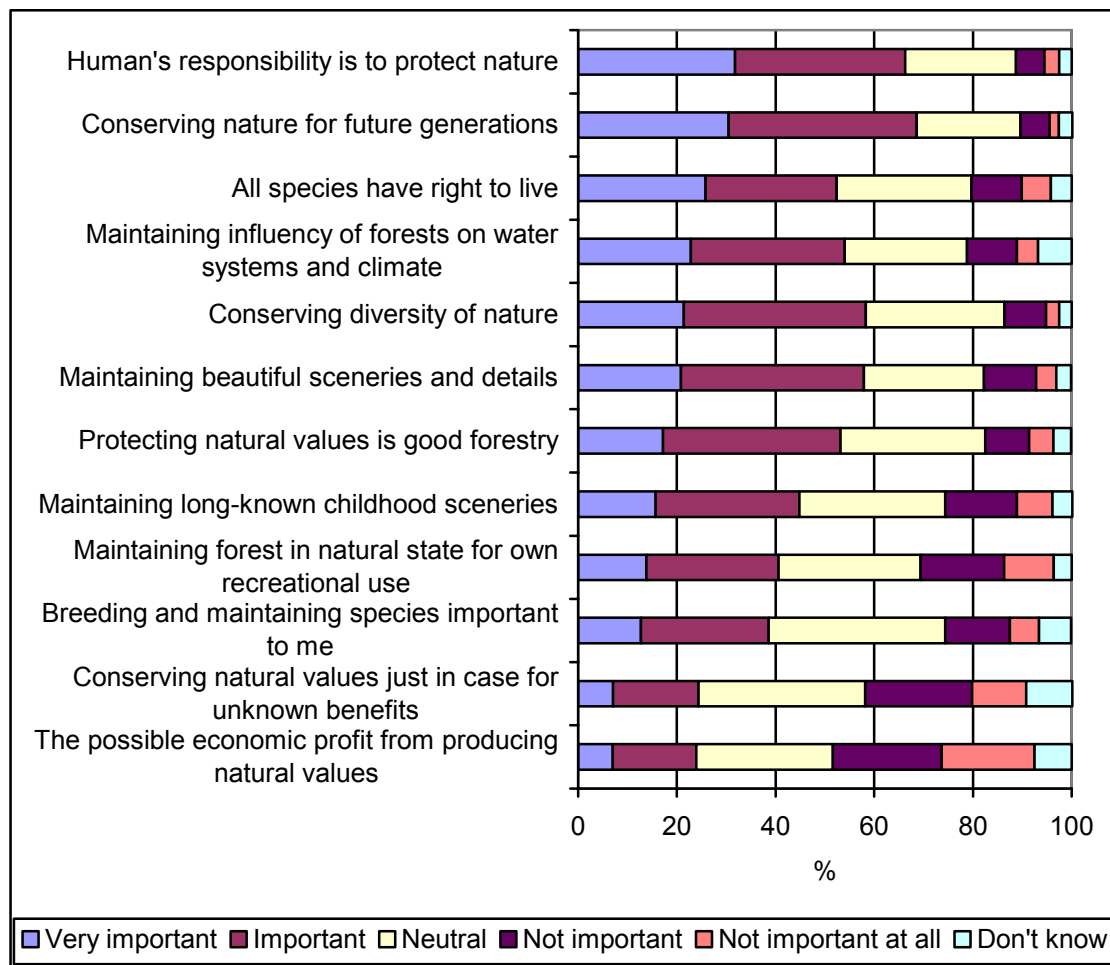


Figure 8. The importance of different aspects when the forest owners would consider participating in TNV (shares of answers, all respondents).

4.5 Estimating the degree of compensation

In the beginning of this section of the questionnaire there was a short description of a stand of six hectares that the respondents should imagine to own. The described stand corresponded to a typical stand of which the agreement has been made in the TNV pilot project in Satakunta. Recall, that in the experiment, in 2003 the average compensation was 170 euros per hectare per year and in 2004, 161 euros per hectare per year (Gustafsson and Nummi 2004). The stands not fulfilling the environmental protection criteria (see Etelä-Suomen metsien... 2003) are excluded from these mean compensations.

The forest owners considered first which aspects they would weigh to be important when estimating the degree of the compensation. The most important factor in their opinion is the decrease in the income due to the lost wood production on the stand; nearly half of the respondents considered it to be very important aspect (see Fig. 9). The respondents considered the natural values of the stand to be the least important factor of the given options in determining the compensation even though about half of the respondents considered also this either very important or important. The respondents from Etelä-Savo weighed the aspect of future transfer of the farm to a descendant to be very important factor more often (34.2%) than the respondents from Häme (24.1%).

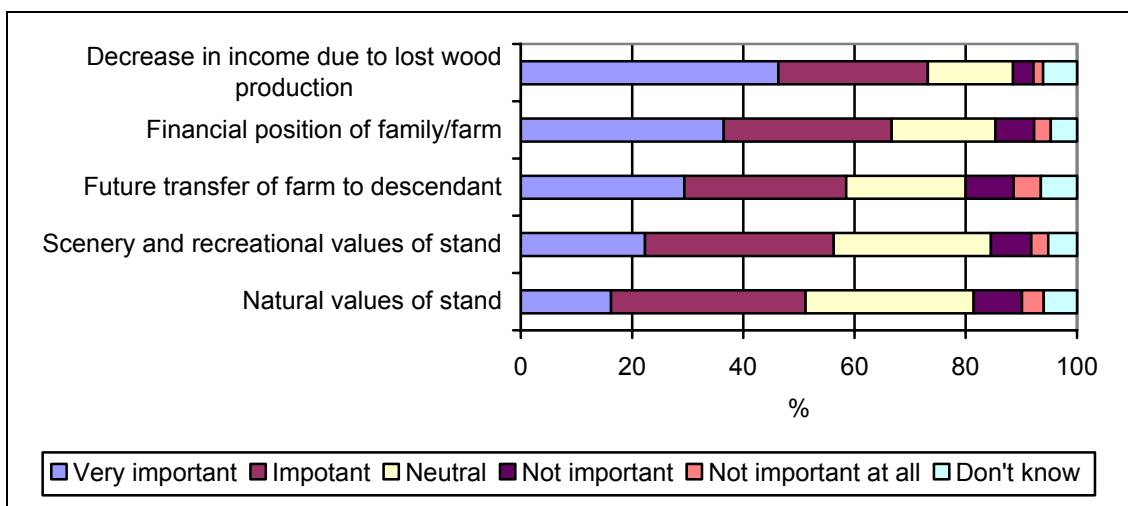


Figure 9. The importance of different aspects when the forest owners would estimate the degree of the compensation (shares of answers, all respondents).

The forest owners were asked to estimate how much they would claim to have as compensation for conserving the described six-hectare-stand for ten years. They were

also informed that in Satakunta, in the TNV pilot project, 6,000 – 17,000 € would be paid as compensation for this kind of stand (i.e. 100 – 280 euros per hectare per year) and the tax free compensation would be paid as lump sum in the beginning of the period.

Few answers were considered as protestation. There was one compensation claim of 300,000 euros, 210,000 euros and 100,000 euros each. Two “protest claims” originated from Häme and the third one from Etelä-Savo.

After the observed outliers were removed from the data set, the highest claims were those of 60,000 euros (see Fig. 10). The median of the compensation claims was 15,000 euros per six hectares per ten years (= 250 €/ha/year), while the mean was 17,489 euros (= 291.5 €/ha/year). The mode of all answers was 10,000 euros (=167 €/ha/year) which was announced by 41 respondents. Also 20,000 euros was a popular answer (34 respondents out of 244). The median claim was higher among the forest owners from Etelä-Savo, 16,000 euros, than from Häme, 15,000 euros. Also the mean was higher for Etelä-Savo, 18,100 euros, compared to Häme, 16,800 euros.

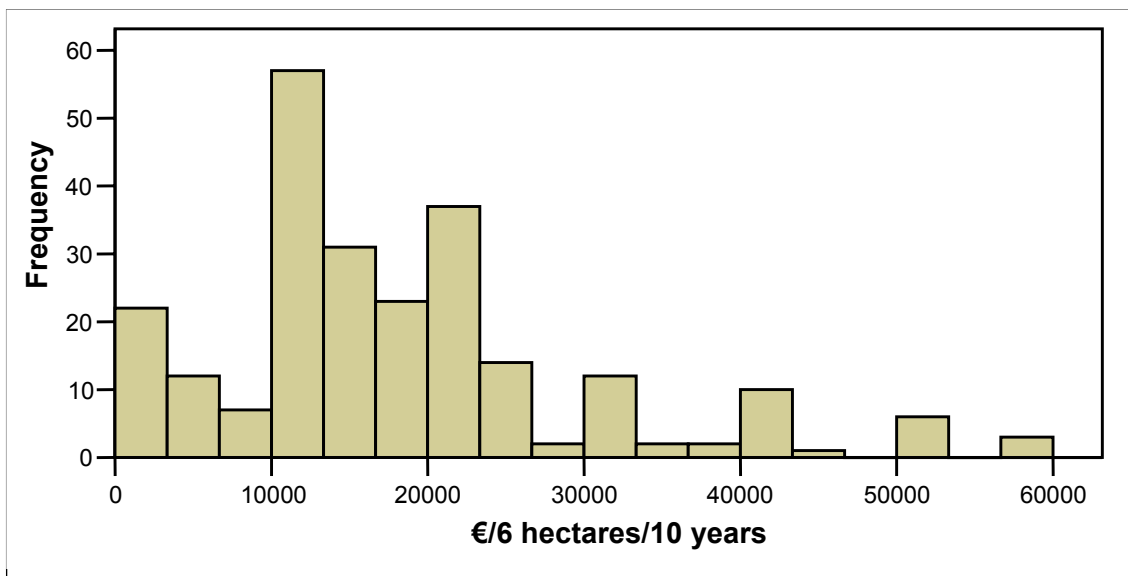


Figure 10. Histogram of the compensation claim for the described stand after the three protest claims were excluded (n=241).

For those respondents who did not answer to the question of the compensation claim, a question of reasons for it was posed. The respondents were asked to choose the most important reason but still many mentioned more than one. Therefore the percentage does not sum up to 100. The most common stated reason was that estimating the

compensation claim was too difficult (31.2%) (see Fig. 11). Other popular answers were “I want to practice active forestry on my forest property and therefore I don’t want to protect even part of it” (27.8%) and “I don’t want the authorities to intervene in issues concerning my forest more than it is mandatory by law” (23.7%).

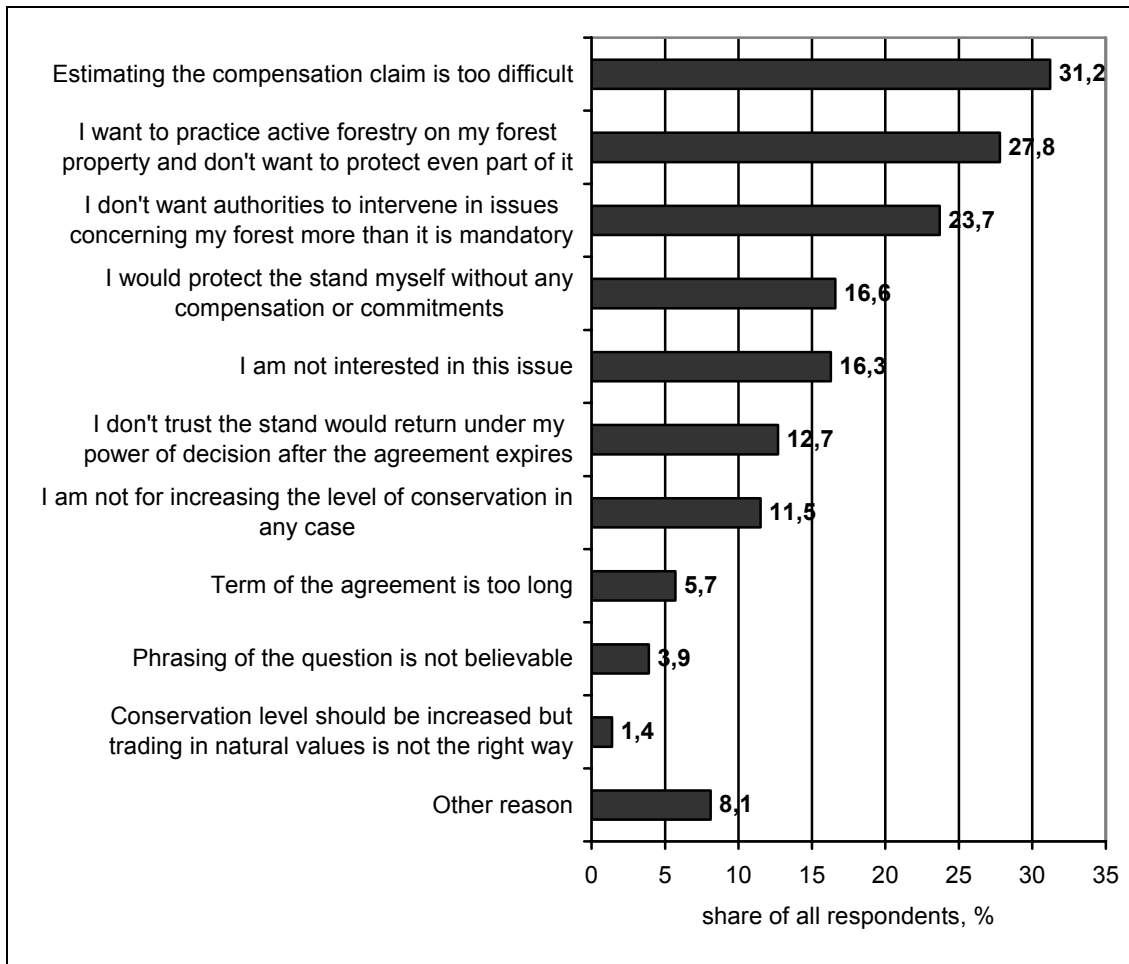


Figure 11. The reasons for not stating the compensation claim.

Again the forest owners of the two regions diverged in their answers. The respondents living in Häme considered the estimating of the compensation claim to be too difficult more often (35.6%) than the respondents living in Etelä-Savo (27.2%). However, the respondents from Etelä-Savo announced more often that they were not interested in this issue (20.1%) than the respondents from Häme (12.0%). Also the option “I don’t want the authorities to intervene in issues concerning my forest more than it is mandatory by law” was more often mentioned to be the reason for not stating

the compensation claim among forest owners from the region of Etelä-Savo (28.9%) than those from Häme (18.0%).

5 Discussion and conclusions

This survey gave important information about the attitudes of the forest owners to environmental protection and also revealed some interesting differences between the forest owners in the regions of Häme and Etelä-Savo. Regarding the demographic characteristics, the frequencies of gender, age, residential environment, and educational and professional levels of the respondents corresponded well to the results of previous surveys of the forest owners (Horne et al. 2004, Karppinen et al. 2002). For example, the average age of the respondents of this survey was 59 years, while in previous surveys it has been 58 years (Horne et al. 2004) and 57 years (Karppinen et al. 2002). Also, the percentage of female respondents was 24.5 per cent in this survey, being nearly the same as in previous surveys (Horne et al. 2004: 21%, and Karppinen et al. 2002: 24%). This indicates that our results represent reliably the whole Southern Finland, although our sample included only two regions.

The respondents of the regions differ with respect to their residential environment, educational and professional levels, incomes, and forestry education. The forest owners from the region of Häme live more often in a big town, have generally higher education, are more often in senior or leading position in their profession, have greater incomes and have more often a degree in forestry. In contrast, the forest owners from the region of Etelä-Savo have more often studies of forestry included in their degree, for example. Moreover, there were also differences between the respondents of the areas regarding how actively they manage their forest holdings and sell timber. These differences provide an interesting topic for future research to analyze the relationship between demographic characteristics, forest management activity and attitudes.

Regarding the usefulness of TNV for protection of privately owned forests at the level of whole Southern Finland, these preliminary results revealed three important features. First, most of the forest owners (about 60%) thought that the current conservation level is suitable or considered even the current level as excessively high (23.5%). Increased conservation was supported by 8.3 per cent only. These results are nearly the same as in the recent publication of the Finnish Forest Research Institute, where the survey of 3,000 private forest owners was represented (Horne et al. 2004). Second, most of the respondents said they probably would not offer part of their forest

to the TNV if it would be possible in the future. Third, most of the respondents answered that the TNV and other voluntary-based protection measures have not changed their attitudes to the environmental protection. However, 30 per cent of the respondents answered that the new protection measures have changed their attitude to be more positive.

These results suggest that implementation of TNV widely in Southern Finland could turn out to be difficult. The majority of forest owners would not be willing to participate into a voluntary conservation. However, still some 25 per cent would offer part of their forests to the TNV. Thus there seems to be a group of environmentally minded forest owners that are willing to participate and whose attitudes have changed to be more positive due the new protection measures. The results considering environmentally minded forest owners are in line with results from a recent survey that was sent to the forest owners whom have participated to the TNV pilot project in Satakunta region (Juutinen et al. 2005). However, the important question is whether this environmentally minded group is large enough so that ecologically sufficient conservation level can be achieved without mandatory means. For example, if one fourth of forest owners would be willing to offer their forests to TNV and half of these forests prove to be worth protection, the situation could be fairly good concerning the conservation level.

Regarding the question of attitudes to the environmental protection the forest owners of the two regions diverged as well. The forest owners from Häme seem to have more positive attitudes, since they answered more often that the conservation level should be increased from the current level. In addition, the forest owners from the region of Häme said more often to be ready to offer part of their forest property for sure to the TNV if possible in the future, while the forest owners from the region of Etelä-Savo revealed more often their unwillingness to participate in TNV in any case. This suggests that the TNV would be more effective protection measure in Häme compared to Etelä-Savo. Moreover so since there were not any significant differences between the regions in the amount of information the respondents had about the TNV or other voluntary-based means of conservation. Thus, there may be large differences in attitudes among regions in Southern Finland. This should be taken into account when the decisions about extending the conservation network will be done.

According to these results, the voluntary means of protection, such as managing forests paying special attention to natural values and leaving some areas outside forestry

work, are quite frequently used by forest owners. The result is similar to the previous findings (Horne et al. 2004). This outcome indicates that TNV could replace other voluntary means of protection and therefore the area of conserved forests due to TNV may not increase, for example, as much as in land takings in practice. Interestingly, the key biotopes were more frequently conserved in the region of Etelä-Savo than Häme. One reason for this might be that forest owners in Etelä-Savo are more aware of this law and know their own forest better than the respondents from Häme.

The forest owners considered recreational use, hobbies, and the sentimental values to be very important objectives to own forest in addition to the aspects of wood production and harvesting income, and the financial security from owning forest. These aspects have proved to be important for the forest owners also in previous studies (Horne et al. 2004, Karppinen et al. 2002). The forest owners in Etelä-Savo consider the economic aspects of forest ownership – such as the wood production, the harvesting income and the financial security the forest ensures – to be more important than the forest owners from the region of Häme. An explanation for this might be that the forest owners in Etelä-Savo are economically more dependent on their forest than the forest owners in Häme. This assumption is supported by the fact that they have sold more timber during the last five years, and they seem to be more active as forest owners in general.

Interestingly, the economic aspect does not seem to be very important for the forest owners when they consider participating in TNV. This suggests that the role of compensation is not that large when the forest owners consider conserving their land. The most important factors are the conserving nature for future generations and human's responsibility to protect the nature. Thus moral and ethical aspects seem to be very important for the forest owners in this respect. This result indicates that forest owners would protect the land even without compensation if they consider the issue from moral and ethical point of view. However, the compensation claims in this survey were higher than the stated compensation claims in the TNV pilot project compared by both median (250 €/ha/year vs. 200 €/ha/year) and mean (291.5 €/ha/year vs. 210.6 €/ha/year) (Gustafsson and Nummi 2005). And moreover, compared to the actual payments, the difference is even greater. Thus, in general, the forest owners would demand high compensations for participating in TNV and the conservation could get expensive.

Another interesting result is that when estimating the degree of the compensation, the respondents considered the natural values of the stand not to be that important as other aspects, although the paid compensation actually is determined to a great extent by the natural values existing on the stand. However, they revealed their rational economic behaviour by determining the decrease in income due to lost wood production to be the most important aspect in this respect. The respondents diverge to some extent from the forest owners in Satakunta who have participated in the TNV pilot project. In research of forest owners in Satakunta, the correlation between the compensation claims and forest values was not nearly as strong as the correlation between the compensation claims and the index of ecological quality, and a reason might be that the owners who submitted valuable forests to TNV have strong environmental preferences and were claiming relatively small compensation for an agreement (Mäntymaa et al. 2005). Another reason could have been that the forest owners in Satakunta behaved strategically and therefore the compensation claims correlate more with the index of ecological quality than with the forest values. In this hypothetical situation of the survey, the respondents did not have the possibility to behave strategically in this manner.

This survey revealed some regional differences in the forest owners' attitudes. These differences in attitudes may be caused by differences in demographic characteristics. The respondents from Häme, who lived more often in urban areas and had higher education than the respondents from Etelä-Savo, were also more willing to participate in TNV. Thus, this survey supports the assumption that forest owners living in urban areas and with high education are more ready to conserve their forests with the new voluntary-based protection measures, such as TNV. However, urban owners do not necessarily know their own forest well enough in order to be able to present the conservation claim and to know if there exist natural values to protect. But, since they seem to be less active in carrying out the silvicultural measures, there could be more natural values conserved in their forests already. Thus, there seem to be clear differences among forest owners in different areas, but more research is needed to determine how these differences may affect to the implementation of TNV. In general, increasing conservation level in privately owned forests in Southern Finland may face some difficulties due to the attitudes of the forest owners. Still, the voluntary incentive-

based instruments are accepted among forest owners (e.g., Horne et al. 2004), and about one fourth of the forest owners are willing to participate in TNV.

However, the role of information is crucial for TNV to come into operation since so many did not know whether or not they want to offer their land for the process in future if possible. Many forest owners answered not to know TNV or other voluntary-based protection measures at all. Also, the forest owners from Häme, although living close to Satakunta, had not received more information about TNV before than the ones from Etelä-Savo, and thus the information has not spread from the experiment in Satakunta very widely. In addition, the forest owners considered the estimating of the compensation claim to be too difficult if thinking of participating in TNV. For these reasons, an active information campaign is required from the authorities and the resources for it should be targeted as well. This could change forest owners' attitudes to conservation and enlarge the group which is willing to participate in voluntary conservation programs. Also, the information about TNV and other voluntary-based protection measures could be given to the forest owners when instructing them with their forestry plans. This would be an appropriate occasion to give them information about these new possibilities for land use.

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