If the marking technique can be made flexible, perhaps all NFI sample plots could be put into group 1.

If determining the increment of the trees and monitoring the forest ecosystem are set as the ultimate objectives, instead of changes in variables associated with growing stock volume, then the inventory design would be different to that discussed here. In such a case special attention has to be paid to the comprehensive and careful measurement of the plots. Only a relatively small number of this kind of sample plots could be afforded.

In cases where the objectives of the national forest inventory are manifold, simplicity as the guidelines for the inventory design may have to give way to complexity in layout, if the requirement of optimal design are to be met.

References


Total of 16 references

Picking of wild berries and edible mushrooms in the Rovaniemi region of Finnish Lapland


Olli Saastamoinen and Seppo Lohiniva

This paper is a translation of the Finnish paper:


According to 459 and 350 questionnaires sent in 1983 and in 1985, respectively, households in the Rovaniemi region, located on the Arctic Circle, eagerly picked wild berries. In both years, four out of five households picked at least one species of berry. In 1983 the total amount of wild berries picked was 29.2 kg per capita. In 1985 it was 15.0 kg per capita. Three species, the lingonberry (Vaccinium vitis-idaea L.), cloudberry (Rubus chamaemorus L.) and bilberry (Vaccinium myrtillus L.) made up 96 % of all the wild berries picked during both years. Most of these berries were picked for the family's own use, but many were also picked for sale. In 1983, 13 % of all the berries picked were sold. In 1985, 19 % were sold. The cloudberry, although difficult to find, is the most important commercial species and also for household use it is the most sought - after wild berry. Only very small amounts of edible mushrooms were collected, 1.0 kg per capita in 1983 and 1.3 kg in 1985.


Keywords: fruits, berry picking, picking for own use, commercial picking, Rubus chamaemorus, Vaccinium vitis-idaea, Vaccinium myrtillus, edible fungi. 

OCD: 892.7 + 892.53

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Reno Päiviönen & Hanna Yli-Kojo

Silva Fennica 23 (3)
1. Introduction

Lapland is the northernmost part of Finland. Forests grow slowly in its severe northern climate, but timber production and non-timber uses of forests have special regional importance owing to the limited possibilities for agricultural production. Among the non-timber uses of forests, picking wild forest and peatland berries and edible mushrooms has always held a special position in Finland. Wild berries are a traditional source of food and a well-established export product. In modern society, both of these functions have survived. In addition, berries are used widely in the domestic food industry. Berry picking gives extra tax-free income to people who pick berries for marketing, and collecting them for the family’s own use is also a popular leisure activity.

2. Material and method

The Rovaniemi region refers here to two communes, the town of Rovaniemi and Rovaniemi (Rovaniemen) kommun). The town of Rovaniemi is located just on the Arctic Circle. The population amounts to 30,000 inhabitants. This town is the administrative and commercial centre of Lapland. Rovaniemi parish, a rural commune surrounding the town of Rovaniemi, has a population of 20,000 inhabitants. Besides services and small industries, its main primary activities are forestry, agriculture, and water power plants. In addition, both communes rely heavily on tourism. The land area of Rovaniemi region covers 7,537 km² and the population density is 6.7 persons per km². The population of the Rovaniemi region includes roughly one-fourth of the total population of Finnish Lapland.

The method of the study was a questionnaire sent through the ordinary postal system, the Lysekk unit collecting berries and mushrooms is the household, the study population consisted of households. A household is defined here as a family or single person having its or his own meals arrangements. In 1984 there were 18,307 households in the Rovaniemi region. The questionnaire was mailed twice, once in 1983 and again in 1985. The sample was chosen randomly from the official population register.

The questions put to households concerned the participation in picking wild berries and edible mushrooms in the years studied. The total amounts of nine wild berry species, the false morel and other edible mushrooms picked for own use and for sale, were main topics in the questionnaires. The species of other edible mushrooms collected were not asked.

In 1985 the sample included 459 households, of whom 358 replied. The response was 80%, excluding from the sample 14 unknown addresses. In 1985 the sample was 350 households of which 291 answered. The response was 84%, excluding 3 unknown addresses. These percentages of reply are a little higher than usually obtained in these kinds of surveys.

Comparison between the socio-economic distribution and the size of households between the responders and the population showed that the data are fairly representative. The relatively large sample size means that, in principle, the reliability of the results is satisfactory. However, there remains the possibility of systematic errors in the answers. In both years the questionnaire was sent in mid-October just after the end of the berry and mushroom season, and the time-lag between the first picking activities and arrivals of the questionnaire may have decreased the reliability.

Id addition, with the survey method, any socially approved activity, including berry-picking, may be positively skewed. There are not, however, any other obvious reasons for respondents to exaggerate or underestimate the amounts they picked. If something of that kind did happen, one could assume that the upward rounding off would have been more likely for amounts picked for household use and the opposite would be true if berries or mushrooms picked for sale.

3. Results

People living in the Rovaniemi region engage in picking wild forest and peatland berries. During both 1983 and 1985, four out of five households picked at least one species of berry for their own use (Table 1). The opposite is true for edible mushrooms. Only one third of all households picked these natural products. In Lapland the traditional belief has been that mushrooms are most suitable for reindeer food. This belief seems to be disappearing slowly.

During both years households in the rural commune participated slightly more actively in berry picking than did their urban neighbours. In 1983 urban families participated more actively in mushroom picking, but in 1985 the rate of participation was slightly higher in rural areas.

The highest participation rates for berry picking concerned the three familiar species: lingonberry (Vaccinium vitis-idaea), bilberry (Vaccinium myrtillus) and cloudberry (Rubus chamaemorus). The lingonberry and bilberry are abundant species but in the Rovaniemi region black crowberry (Empetrum hermaphroditum) has the highest total biological yield (Jaakkola 1985). Picking of this berry is unusual as is picking of bog whortleberry (Vaccinium uliginosum). So far, most people do not know the potential of these two abundant species for household use. The raspberry (Rubus idaeus) and even more the arctic raspberry (Rubus arcticus) are appreciated but they occur and fruit sporadically and are found mainly in southern parts of Lapland. The total amount of berries and mushrooms picked by all households was 30.2 kg per capita in 1983 and 16.3 kg in 1985 (Table 2). The difference in total amounts picked in the two years is large but typical: annual variations in biological yields are reflected in the amounts picked.

The biological yields in 1983 were at about average level for bilberries and cloudberries but higher than the average for lingonberries (Jaakkola 1985). In 1983 the market price for lingonberries was also high, and retail shops and other berry buyers bought three to four times more lingonberries than usual (Kujala et al. 1986). For these reasons, most of the difference in total picking between 1983 and 1985 is due to lingonberry picking. In both years, the three most popular berries (lingonberry, bilberry and cloudberry) made up 96% of all wild berries collected from forests and peatland. The role of other species is negligible so far, even though the abundant biological yields of certain berries (Empetrum hermaphroditum, Vaccinium uliginosum, and to lesser extent also Sorbus aucuparia) would provide great opportunities to increase picking.

In commercial picking, the most important species economically is the cloudberry (Rubus chamaemorus). During both years, almost twofifths of the total cloudberry picking was sold. The price of cloudberries obtained by a picker in 1983 and 1985 was 33 FIM per kg. In 1983, 38% of all the income obtained by berry pickers was from cloudberries. In 1985 the proportion of the berry income represented by cloudberries was 92%. The average of the two figures is
Table 1. Participation (%) of households in the Rovaniemi region in collecting wild berries and edible mushrooms in 1983 and 1985.

<table>
<thead>
<tr>
<th>Species</th>
<th>For own use</th>
<th>For sale</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Year 1983</td>
<td>Year 1985</td>
</tr>
<tr>
<td>Vaccinium vitis-idaea</td>
<td>73</td>
<td>66</td>
</tr>
<tr>
<td>Vaccinium myrtillus</td>
<td>79</td>
<td>69</td>
</tr>
<tr>
<td>Rubus chamaemorus</td>
<td>58</td>
<td>67</td>
</tr>
<tr>
<td>Rubus idius</td>
<td>14</td>
<td>13</td>
</tr>
<tr>
<td>Sorbus aucuparia</td>
<td>12</td>
<td>6</td>
</tr>
<tr>
<td>Empetrum hermaphroditum</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>Vaccinium oxycoccus</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Vaccinium uliginosum</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Rubus arcticus</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Gyromitra esculenta</td>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td>Other edible mushrooms - Muita sieniä</td>
<td>25</td>
<td>34</td>
</tr>
<tr>
<td>At least one berry species - Ainakin yhtä marjalajia</td>
<td>77</td>
<td>81</td>
</tr>
<tr>
<td>At least mushrooms - Sieniä</td>
<td>30</td>
<td>35</td>
</tr>
<tr>
<td>Wild berries or edible mushrooms - Total</td>
<td>77</td>
<td>81</td>
</tr>
</tbody>
</table>

65%; and according to this, about two-thirds of such wild berry income comes from cloudberries. The average price for cloudberries was 30 FIM per kg in Finnish Lapland in 1977–1985 (Kujala et al. 1986). The commercial price for lingonberries obtained by a picker was 12 FIM per kg in 1983 and 8 FIM per kg in 1985. During both years the price for bilberries was little below 7 FIM per kg. As mentioned, in 1983 extraordinarily large amounts of lingonberries were collected for sale. The average price for lingonberries obtained by a picker was just above 9 FIM and respectively for bilberries just above 7 FIM per kg in Finnish Lapland in 1977–1985 (ibid.). Commercial picking of lingonberries and bilberries depends much on their sale prices. For these two berries, on a national scale Lapland is a marginal producer. If there are good yields in other parts of the country, the prices for lingonberries and bilberries, which ripen later in Lapland, remain low. In the opposite case, which is rare, prices in Lapland may rise high as illustrated by the 1983 lingonberry situation.

The false morel (Gyromitra esculenta) when properly spooled or dried belongs to the edible mushrooms in Finland. It is virtually the only mushroom species that has commercial importance in Lapland. In the Rovaniemi region, however, it is picked commercially in small amounts and only occasionally.

4. Discussion

The total amounts of wild berries collected by inhabitants in the Rovaniemi region are about 2-4 times greater than the national average. Mushroom collection is lower than the national average (Saastamoinen 1983).

Table 2. Wild berries and edible mushrooms (kilograms per capita) collected by households in 1983 and 1985, and the distribution (%) of the collected berries and mushrooms for own use and for sale.

<table>
<thead>
<tr>
<th>Species</th>
<th>Year 1983</th>
<th>Year 1985</th>
<th>Year 1983</th>
<th>Year 1985</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vaccinium vitis-idaea</td>
<td>16.5</td>
<td>4.8</td>
<td>48</td>
<td>87</td>
</tr>
<tr>
<td>Vaccinium myrtillus</td>
<td>6.1</td>
<td>5.9</td>
<td>72</td>
<td>94</td>
</tr>
<tr>
<td>Rubus chamaemorus</td>
<td>5.7</td>
<td>5.8</td>
<td>63</td>
<td>64</td>
</tr>
<tr>
<td>Sorbus aucuparia</td>
<td>0.4</td>
<td>0.2</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Empetrum hermaphroditum</td>
<td>0.4</td>
<td>0.2</td>
<td>46</td>
<td>100</td>
</tr>
<tr>
<td>Vaccinium oxycoccus</td>
<td>0.5</td>
<td>0.2</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Vaccinium uliginosum</td>
<td>0.0</td>
<td>0.0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Rubus arcticus</td>
<td>0.0</td>
<td>0.0</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Wild berries - Total</td>
<td>29.2</td>
<td>15.0</td>
<td>57</td>
<td>81</td>
</tr>
<tr>
<td>Lyömömerkijä - Yhteenä</td>
<td>0.1</td>
<td>0.1</td>
<td>80</td>
<td>100</td>
</tr>
<tr>
<td>Other edible mushrooms - Muita sieniä</td>
<td>0.9</td>
<td>1.2</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Mushrooms - Total</td>
<td>1.0</td>
<td>1.3</td>
<td>96</td>
<td>100</td>
</tr>
<tr>
<td>Sieniä - Yhteenä</td>
<td>32.0</td>
<td>16.3</td>
<td>58</td>
<td>82</td>
</tr>
</tbody>
</table>

Compared to other studies concerned specifically with berry picking in certain urban and rural communes, one may find results that show considerably lower amounts (Salo 1984), about the same amounts (Rossi et al. 1984) or locally even greater amounts of berries picked (Raati-Kainen 1978, Salo 1985). To summarize briefly, without going deeper into comparisons, these studies indicate that there are great differences in picking activities between different parts of the country, between different years and different species. The largest amounts are picked in rural communes of central, eastern and northern parts of the country.

The inhabitants in the Rovaniemi region are most interested in picking cloudberries in Finnish Lapland. This differs from the habits of collecting berries in central or eastern parts of Finland. Although the cloudberry is the most important and valuable berry, the lingonberry and bilberry are not without significance specially in households' own use in central Lapland. According to a preliminary estimate (Saastamoinen 1984), only 3 % of the total biological yield of bilberries and 4 % of the total biological yield of lingonberries was utilized in 1983 in the Rovaniemi region of Finnish Lapland. These figures are considerably lower than those estimated for some communes in Central Finland (Rossi et al. 1981). For cloudberries, the utilization percentage is much higher but the exact amounts...
are unknown. Generally speaking there are not a lot of studies about this topic in Finland. In Sweden, Kardell et al. (1982) supposed that about 5–7 % of the total cloudberry yield was picked in 1977. For most of the other species (excluding the rare Rubus arcticus) the utilization rates can be estimated to be closer to zero than to one. Although the economically potential yield that can be utilized is much lower than the biological yield - perhaps half of the biological yield (Barinov & Sakovets 1980) or even less in areas with low population density - there seem to be many opportunities to increase picking.

To what extent these potentials can be realized in future is a question that remains largely unanswered.

The major part of the annual utilization in the Rovaniemi region was for home use. It can be increased but household use has its natural saturation levels. In principle, commercial picking may have wider potentials for enlargement, but its future depends on how picking is organized and how many berry baskets are bought. The potential of the wild berry market in Rovaniemi is considerable, because the berries are consumed by very many people who are interested in eating them.

References


Total of 11 references

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