



Swedish University of Agricultural Sciences
Faculty of Forestry
Umeå, Sweden

Commercial Activities in a Local Natural Resource Dependency Perspective

CAMILLA THELLBRO AND GUN LIDESTAV

SLU, Department of Forest Resource Management, Umeå

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Abstract

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Natural resources are important to the individual and to society. However, the definition of 'natural resources' as well as the regulation of the use of them vary. In order to determine which types of natural resource and access to them that can be considered important to a local society and by whom, a case study was undertaken in a rural boreal municipality. This study related natural resources to commercial activities by means of a questionnaire to 424 randomly selected workplaces in Vilhelmina municipality. Results show that 78% of the respondents consider themselves highly dependent on local natural resources (LNRs) and that they, together, engage many people. LNR dependent respondents were grouped by cluster analysis into seven LNR/LNR access dependency profiles. Clear patterns were found with respect to main business categories in terms of dominance, and variation within profiles and overlap between profiles. Forest and/or agricultural farming (FAF) businesses were for example more or less separated from other types of businesses ('various') but still they were not unified as a group but found in, and even dominating, more than one profile. Similarities and differences with respect to geographical locations, customers and engagements further characterise the profiles. High LNR dependency and patterns identified indicate the value of the chosen approach in relation to other types of approaches. It supports the notion that a LNR/LNR access dependency perspective on commercial activities could help to improve strategies for strengthening the local economy and maintaining and developing the rural boreal municipality as a resource community.

Keywords: rural, local economy, local society, 'natural resource field', rural resource community, property rights, small business

Co-author: Gun Lidestav (Associate Professor), Department of Forest Resource Management, Swedish University of Agricultural Sciences (SLU), SE-901 83 Umeå, Sweden.

E-mail: Gun.Lidestav@srh.slu.se

Telephone: +46 90 786 8391

Fax: +46 90 778 116

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Introducing society and natural resources

Views on natural resources

The way that natural resources are viewed varies between disciplines and cultures according to time and place. Natural resources can be seen from the perspective of natural science as well as that of society (Hettne, 1980; Svedin, 1981; Eriksson et al., 1983). Today, natural resources are usually regarded as raw materials for processing, fulfilling an important role in international trade (Alvstam, 1980). There are, however, natural 'services' as well as 'goods', which can function as natural resources without being raw materials. A general definition of a natural resource is that it is a phenomenon and/or a state in nature that man, individually or collectively, can use to achieve some sort of human goal (Allwood, 1981; Månsson, 1993). Daily (2000) talks about 'ecosystem services' and de Groot (1992) uses the concept of (ecological) functions, which he divides into four categories:

- **Regulation functions:** Natural and semi-natural ecosystems have the capacity to regulate essential ecological processes and life-sustaining systems, which in turn contribute to the preservation of a healthy environment by maintaining clean air, water and soil (cf. Hjelm, 1980).
- **Carrier functions:** Natural and semi-natural ecosystems offer a suitable substrate or medium for many human activities such as the development of settlement, forestry, agriculture or recreation (cf. Rudberg & Werner, 1980).
- **Production functions:** Nature comprise many different resources, such as genetic material, food, raw materials for industrial use such as timber and resources for energy production.
- **Information functions:** Natural ecosystems contribute to the preservation of mental well-being by offering opportunities for reflection, spiritual enrichment, cognitive development and aesthetic experience.

The functions of nature are prerequisites for natural resources as well as they are natural resources (both 'goods' and 'services') in their own right (Eriksson et al., 1983; Hjelm, 1980). Processes in and components of nature facilitate the production of 'goods' and 'services' that directly or indirectly

satisfy human needs. Human needs in this case consist of physiological needs (oxygen, water, food, housing, physiological health, a healthy and clean environment) and psychological needs (mental well-being, which depends on opportunities for cognitive and spiritual development, recreation, developing social contacts, reaching a certain social status and the need to secure a future for present as well as future generations) (de Groot, 1992).

Since human needs differ between societies, a natural resource in one society is not necessarily a natural resource in another. Eriksson et al. (1983) define natural resources as a socio-cultural phenomenon that can only be described and analyzed in relation to a given society. Every (local) society has its own 'natural resource field' (Hettne, 1980; Eriksson et al., loc. cit.). Nevertheless, the rights to own and/or to be able to use natural resources are generally important to the individual and to society (Eriksson et al., loc. cit.). Physical and mental well-being can, in many ways, depend on access to natural 'goods' and 'services' (cf. "natural capital"; Vennesland, 2004). It is, however, the level of technical skill, as well as cultural codes, politics and the law that limit or promote access to and, hence, the use of natural resources. The same features determine if and for how long a natural resource will remain one (Månsson, 1993; Svedin, 1981).

Property and accessibility

Property rights can be described as a system of economic and social policies and regulations involving governments and individuals, which define the rights to use scarce resources (Furubotn & Pejovich, 1972; Bromley, 1991).

In Sweden today, the opportunities for use and the ways in which land and various natural resources can be exploited depend on both cultural factors discussed above and on how accessibility is regulated through ownership legislation, different kinds of agreement and even historical and common rights. For example: timber logging is generally dependent on land ownership; agricultural activities can be carried out on the basis of land-use agreements; the mining of minerals is of national interest, overriding land ownership rights; reindeer herding is, in part, a historical right, through the 'prescription from time immemorial' (urminnes hävd); and picking berries or hiking in the countryside are common rights, which rely on 'the legal rights of public access to private land' (allemansrätten). Every

type of natural resource utilization is affected by a combination of laws and regulations (Bengtsson, 1999).

With land (property) ownership follows particular property rights, which generally are divided into 1) the right to use the property and the revenue from the property, 2) the right to exclude others from the property, and 3) the right to divide and transfer the property and/or the first two rights (Furubotn & Pejovich 1972). These rights are not absolute, but subject to a number of restrictions, depending on time and place. Subsequently, rights and regulations prescribed by law or by common practice constitute the concept of property rights. As mentioned above 'the right of public access', often referred to as a 'common law' (sedvanerätt), grants people the right to temporarily visit, camp on and "make use of" private land. It guides how to handle landowners versus the public's interests. However, the interpretation of the common law varies between countries, between regions within the same country and between different groups of people (e.g. local people and visitors). (c.f. Bengtsson 2004). In Sweden, 'the right of public access' only apply to natural persons. The Swedish legislation does, however, not restrict an association or enterprise to arrange a temporary activity within the framework of 'the right of public access' (Westerlund 1999). There is a debate in Sweden about 'commercialisation of 'the right of public access'. The High Court has stated that there is no direct hindrance to use the right for commercial purposes. The discrepancy between law, practices and perceptions can, however, still cause conflicts between different stakeholders, e.g. landowners and tourist enterprises (c.f. Bengtsson 2004).

The perception of an individual's and society's rights to natural resources is constantly changing. From relatively diffuse and socially rooted property rights there has been a shift towards rights being more exclusive and private (MacPherson, 1978). This development can be considered one of the central features of economic modernisation (Granér, 2005). The generally increasing integration of politics and the economy has resulted in restrictions which diminish the owner's potential to control their property. However, the conflict between different interests relating to control and resources affects the relationships between individuals and between individuals and society (Furubotn & Pejovich, 1972, Westholm, 1992). Changes in property rights can

influence the distribution of wealth and income in general and affect the whole political and economic power structure of a society. The understanding of property rights is valuable in explaining the factors affecting, for example, local development (cf. Westholm, 1992; Granér, 2005). For a contemporary and more extensive discussion regarding the nature of and effects from property rights on the utilisation of land and natural resources, see Slee (2006).

The rural boreal municipality as a local natural resource community

In rural resource communities, people rely on the extraction and/or processing ('use') of natural resources for their livelihoods and share many fundamental characteristics and concerns (Reed, 2003). The rural resource community concept, which includes territory as well as interest and attachment (cf. Reed, 2003), can be applied to rural boreal municipalities in Sweden since their historical development and current status are strongly linked to the use of natural resources in boreal forest and mountainous landscapes. Here municipalities located in the interior of northern Sweden are defined as boreal municipalities (Figure 1). In this area, natural resources such as forest, minerals and water for energy production (hydropower) have been determining factors in the establishment and development of the municipalities. Geographically, these municipalities are large and sparsely populated areas, with a limited infrastructure, comprising a community centre surrounded by smaller villages (Almås 1985; Persson, 1998).

In a rural community, small businesses, including agricultural and/or non-industrial private forest (NIPF) farming firms, are crucial to the local economy (Törnqvist, 1995; Taylor, Bryan & Goodrich, 2004). Moreover, the workplace and family dynamics are closely linked to each other (Reed, 2003). For small businesses entrepreneurs, which live the so-called 'independent life mode', the primary goal and a key attribute of "the good life" is independence, satisfaction and to be "one's own boss". Establishment and driving forces are thus said to be based on individual motives and experiences (Bergqvist, 2004). NIPF farmers show many of the same basic conditions for their activities as other types of small business entrepreneurs. Therefore the life mode theory can be applied to them as well (Törnqvist, 1995). Such small businesses, irrespective of their size and economic turnover, offer engagements, i.e.

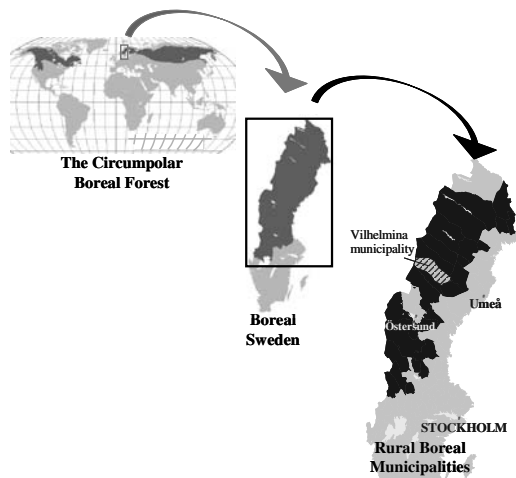


Figure 1. Swedish rural boreal municipalities (black area on right hand map). “Boreal” refers to the location within the circumpolar boreal forest (IBFRA 1997), while “rural” is explained by remote location and sparse population (“Glesbygd”, Statistics Sweden 2007). The latter corresponds to Almås’ (1985) definition of rural local societies.

official labour (‘employment’) as well as labour not registered in official statistics (cf. ‘anställd’ and ‘sysselsatt’; NE Multimedia Plus 2000), that provide incomes as well as opportunities to fulfil other human aspirations and desires of “the good life”. These are features directly and indirectly linked to the local economy.

The social and cultural aspects of the municipality and the accessibility of various types of local natural assets are of crucial importance to the majority of small businesses in a rural boreal municipality (Thellbro & Lidestav, 2006). This assertion is supported by a number of studies suggesting that the development of infrastructure and production systems in a forest dominated landscape are influenced by land (forest) ownership and accessibility to different kinds of natural resources and that this will continue to be the case (Westholm, 1992; Lundberg & Karlsson, 2002). However, the extent and nature of these influences needs to be more thoroughly investigated.

Hypothesis and objectives

In this paper, the overall focus is on the local natural resources (LNRs) and access to them by the local society at the level of the Swedish rural boreal municipality. The municipality level is motivated by the municipality’s role as the lowest tier of government in Sweden. It has a legally regulated

and sector-based responsibility for the maintenance and development of the infrastructure within its geographical borders, to a large part financed by local income tax. It is, further, motivated by the municipality planning monopoly regarding physical environment (Hjelmqvist, 1994; Svenska kommunförbundet, 2002). Moreover, a rural boreal municipality represents one type of rural resource community and so has been used here to represent the natural resource dependent, local society. Historically, the rural boreal municipality development was closely connected to natural resource utilisation. Today, commercial activities within a municipality are not primarily depending on local governmental authorities. They are, however, significant to the local society and the hypothesis is that LNRs, through utilisation related to commercial activities, are still of crucial importance in these areas.

This study is an attempt to describe and assess the ways in which entrepreneurs in commercial activities (i.e. small businesses) consider themselves highly dependent on LNRs and/or their availability. Therefore, the objectives were to:

- profile local commercial activities according to LNR/LNR access dependency;
- characterise these profiles in terms of activities, geographic localisations of activities and engagement opportunities; and to
- discuss the impact of LNRs in a rural boreal municipality context.

Research materials and methods

The case study municipality of Vilhelmina, located in the county of Västerbotten, has the features of the type of natural resource dependent local community (rural boreal municipality) previously described. Geographically the municipality (Table 1) extends from the Norwegian border in the northwest through high and low mountainous regions, descending to mires and forests in the southeast where the community centre is situated (Vilhelmina kommun, 2000; Regional Forestry Board of Vilhelmina, 2002).

Table 1. *The areas of Vilhelmina municipality and different types of land within the municipality borders (Vilhelmina kommun, 2000; Regional Forestry Board of Vilhelmina, 2002)*

Type of land	Total area (km ²)	Fraction of municipality total area* (%)	Area within natural reserve (km ²)	Fraction within reserve of total area (%)
Vilhelmina municipality	*8 742	100	1420	16
Natural reserve	1 420	16	1 420	100
Water	620	7	70	0.9
Forestland (productive)	3 500	40	330	9
Mire	1 900	22	400	21
Mountainous land	2 660	30	600	23
Arable and pastureland	75	0.9	?	?
Settlements	3.3	0.04	?	?

Geographical and infrastructural characteristics within Vilhelmina along with municipality statistics on population and economy (Table 2) are very much the same as for rural municipalities within the boreal region as a whole.

Table 2. *Statistics on the rural boreal municipality of Vilhelmina in comparison to the regional averages (Statistics Sweden 2007)*

Variable	Vilhelmina	Rural Boreal Region
Land Area (km ²)	8 120	167 052
Population	7422	210 478
Inhabitant/km ²	0,9	1,3
Population Decrease (% since 1968)	18	24
Average Age (yrs)	43	44
Working Population (%)	39	41
Forestry, Agriculture, Fishery, Reindeer herding (%)	6	5
Construction/Processing (%)	17	24
Public & Private Services (%)	74	68
Unknown (%)	3	2

“Land ownership” within the municipality of Vilhelmina can generally be interpreted as “forest ownership”. Agricultural activities of different types are, however, found in almost every village. Today though, commercial livestock and milk production are rare and there is no grain production. Forty per cent of the forestland is owned by small-scale private forest owners, 32% is owned by larger companies,

10% is owned by the state, 10% forms the forest common, 2% is owned by the municipality and the remainder belongs to the church, cooperatives, foundations, estates of the deceased persons etc. (Vilhelmina kommun, 2000; Regional Forestry Board of Vilhelmina, 2002).

Within the municipality borders, two reindeer herding communities conduct their activities, which originate in the mountain regions but range over large areas both inside and outside the municipality borders. They use private as well as company owned land, throughout the year (Vilhelmina kommun, 2000; Hahn, 2001).

Initial choices and demarcations and the collection of material

Since commercial activities are of acknowledged importance to society and the local economy (Taylor, Bryan and Goodrich, 2004) they were chosen as target population for categorisation and assessment of local natural resource (LNR) and LNR access dependency within the case study municipality. All branches (i.e. categories of commercial activities) were considered to be of interest, since it was impossible to predict which ones were, at least to some degree, reliant on some sort of LNR and/or type of LNR access.

In this study, “unique workplaces” (UWps) within the Vilhelmina municipality were identified as local commercial activities. A workplace is a recognized official concept denoting an address, building or a group of buildings where a company (a physical or legally appointed person carrying out a business activity) carries out business activities (Statistics

Sweden, 2005). The business activity must be active, that is: subject to value-added tax and/or a registered employer. In Sweden each company has a unique numerical identifier, a personal or organisational number, but since workplaces within companies (which share the identifier) can be located at more than one address, the initial identification of workplaces was based on their personal or organisational number to identify each single commercial activity. Hereafter they are referred to as “unique workplaces” (UWps) (Thellbro & Lidestav, 2006). Almost all UWps could be identified with the help of Statistics Sweden’s record of workplaces, in which contact information, size in terms of number of employees, legal entity, activities etc. were listed.

All types of limited (joint-stock) companies were included. However, some exceptions were made; recent bankruptcies and the pharmacy, three post offices, the Swedish Motor Vehicle Inspection Co. – “AB Svensk Bilprovning” – and the company for the sale of wines and spirits – “Systembolaget”. The latter UWps are all located within the municipality because they are state-controlled and not because of any definable LNR dependency. In addition, all economic associations, trading companies, limited and unlimited partnerships, foundations/funds, and private firms were included. State, municipality and county council bodies were excluded from the analysis. It was decided that these types of workplaces would best be assessed through a different approach due to their complex structures. For similar reasons non-profit making associations, housing co-operatives and religious communities were excluded as well.

These exclusions reduced the total 1 202 UWps in the record to 1 077. Among these, half (539 UWps) were randomly selected to represent the target population and addressed in a survey. A test round among 10 entrepreneurs of different types in other boreal municipalities preceded the actual survey. The survey was performed as a questionnaire where data were collected by means of telephone interviews between July and November 2004. Due to deficiencies in workplace information in the workplace record, the total number of workplaces approached was later reduced to 424. Of the UWps approached, 207 or 48.8% participated, but since some respondents represented more than one workplace, the actual number of responses was 197 (46.5%). Regarding the drop outs; 26.4% of the respondents were unavailable and 24.8% were unwilling to answer

or stated lack of time. The latter category may be explained by disinterest or LNR non-dependency due to the inclusive choice of target population and/or simply by physical lack of time. Based on information available in the workplace record with respect to activities, legal entity, number of employees etc. no obvious patterns indicating bias or uneven representation among the respondents were found. As a consequence of this non-respondent analysis the target population of 1 077 was reduced to 851 and as these were represented by the 197 respondents, it rendered a multiplier of 4.32 for converting responses to population level.

The questionnaire was designed to assess the perceived importance of LNRs and the access to them for owners/representatives of commercial activities. Definitions and understandings of natural resources vary. Therefore it would have been interesting to explore the local understanding and to relate it to existing theoretical discourses. However, in this study the main purpose was to quantify LNR/LNR access dependency in general. This was considered as a necessary first step towards mapping LNR use and the importance of LNRs to the local society. Based on this general natural resource concepts were avoided. Instead relevant (i.e. local) physical and non-physical natural resources, types of land use and general varieties of access were listed based on a wide notion of natural resources as ‘goods’ and ‘services’ like de Groot’s (1992) ‘ecological functions’ and the idea of a local ‘natural resource field’ (Eriksson et. al. 1983, Bengtsson, 1999; Vilhelmina kommun, 2000; Regional Forestry Board of Vilhelmina, 2002) for the respondents to value on a scale from 0 to 4. The respondents were also given the opportunity to supply additional alternatives. The five main categories of LNRs/LNR access listed (cf. Thellbro, 2006) were: “the landscape/appearance of the landscape” (six listed resources), “untouched nature” (12 listed resources), “physical resources and the production of raw materials” (eight listed resources), “types of land/land use” (16 listed resources) and “rights to own and/or to use” (six listed forms general access rights).

To provide context and additional information about LNR/LNR access dependency, a number of supplementary questions concerning the enterprise were included. All UWps that did not depend on natural resources (that is; did not value any of the listed resources higher than 2) were excluded from

further analysis. This study hence refers to 665 (78% of the total number of UWPs in Vilhelmina) LNR dependent UWPs in the target population, which provide a total of 1922 engagement opportunities (Thellbro & Lidestav 2006). The analysis was performed by grouping the respondents, using cluster analysis, with the aim of finding a number of different “LNR/LNR access dependency profiles” among the UWPs, based on their stated LNR/LNR access dependencies. Clusters were created by calculating of dependency frequencies for each of the LNRs/types of LNR access listed. Values 0-2 were given the worth of 0, while values 3-4 were given the worth of 1. Individual UWPs LNR/LNR access dependency frequencies were then compared to average frequencies for each LNR/type of LNR access for all of the clusters. Based on frequency deviations, (higher frequency = higher dependency and vice versa), a LNR/LNR access dependency profile for each cluster could thus be identified. The final number of clusters (i.e. the number of identified “LNR/LNR access dependency profiles”) was chosen on the basis of the statistical information and the results of the analysis. A choice of less than seven clusters would have resulted in hidden information, while more than seven clusters would not have added any further details.

Additional information about the UWPs concerning activities (individually written statements), geographical localisation of activities (marks in pre-determined areas on a municipality map), origin of customers (marks of listed alternatives) and number of engagements (number of engagement opportunities stated within different categories regarding engagement extents) were finally summarized and presented in relation to each LNR/LNR access dependency profile. To facilitate handling of data stated activities were grouped in activity categories (comparable to standard categorisation) (http://www.scb.se/Grupp/foretagsregistret/Dokument/040115_snisorteradeng.pdf, 26-Apr-2006) and these were in turn grouped in business categories (based on locally described local business structure (Vilhelmina kommun, 2000).

Results

Seven different Local Natural Resource (LNR)/LNR access dependency profiles consisting of unique workplaces (UWPs) were identified and named after the main characteristics in their dependencies.

LNR and LNR-access dependency

There were two small profiles, four of medium size and one large profile (Table 3). The profiles were named; V = Varied dependency (a profile were the UWPs were united due to their few and diverse dependencies), O/W = Ownership/Wood, O/N = Ownership/ Non-wood, O/T/N/W = Owner-ship/Tenancy/Non-wood/Wood, O/W/L = Ownership/Wood/ Landscape, U/L = Utilisation/ Landscape and M = Manifold dependency (a profile were the UWPs were united due to their numerous and thus often similar dependencies).

Empty cells in Table 3 do not automatically indicate unimportance. The LNRs were merely not scored by sufficient UWPs to be included in the profile. This is further indicated by the sum of LNR dependency within each profile.

Each profile shows a unique pattern regarding LNR/LNR access dependency. The total number of observations referring to each of the listed LNRs/types of LNR access gives insights into which types of LNR/LNR access were generally considered important among the UWPs of the municipality and which, perhaps, represent more individual needs.

To a large extent, ‘ownership’, ‘cultivable land’, ‘snow and frozen ground’, ‘wood resources’ and the entire municipality landscape (with focus on bare-ground forest landscape) were important in most profiles and thus to the great majority of the UWPs (Table 3).

‘Untouched nature’ was emphasised in Manifold dependency, ‘lakes and water-courses’ mainly in Ownership/Non-wood and Manifold dependency and ‘the legal right of public access to private land’ was considered valuable by Utilisation/ Landscape and Manifold dependency. ‘Untouched nature’, as one of the listed LNR categories, is a broad concept and the list of ‘untouched nature’ alternatives was perhaps more difficult to interpret than the other LNR categories, since the meaning of “untouched” was likely to vary between respondents. In this study however, the respondent’s own understanding and feeling of the concept was considered sufficient. The similarities between Ownership/Tenancy/Non-wood/Wood, Ownership/Wood and Ownership/Wood/ Landscape concerned ‘ownership’, ‘cultivable land’ and ‘wood resources’, while the key differences were the general dependency on the ‘landscape/appearance of the landscape’ in Ownership/Wood/Landscape and the ‘tenancy’ and ‘non-wood resources’ dependency in Ownership/

Table 3. UWps (unique workplaces) LNR (local natural resource) dependency profiles. “A” indicates that nearly all (>75%) UWps stated a dependency on the listed LNR; “b” indicates that >50% but <75% of the UWps identified a dependency. Profiles; V = Varied dependency, O/W = Ownership/Wood, O/N = Ownership/Non-wood, O/T/N/W = Owner-ship/Tenancy/Non-wood/Wood, O/W/L = Ownership/Wood/ Landscape, U/L = Utilisation/ Landscape and M = Manifold dependency

LNR Category	LNR	LNR dependency profile							Σ obs
		1 n=9	2 n=20	3 n=22	4 n=28	5 n=10	6 n=44	7 n=21	
Rights to own and/or to use	Ownership	A		b		A	A	A	91
	Tenancy					A			22
	Prescription from time immemorial			b					11
	Legal right of public access to private land		A	A					47
Type of land/land use	Cultivable land (incl. forest)	b		b		A	A	A	95
	Hard rock and gravel							b	20
	Wetlands			b					14
	Lakes and watercourses (for fishing etc.)	A	b	A					42
	Groundwater					b			17
	Wind								10
	Snow and frozen ground	b	b	A	b	b	b	A	84
	Game hunting	A	b	A		b		b	58
	Non-wood physical resources	A		A		A			62
	Wooden resources	b		b		A	A	A	96
Physical resources and the production of raw materials	Snowy landscape (forest + mountains)			A					20
	Bare ground landscape (forest + mountains)			A					25
	Mountainous landscape (snow + bare ground)			A					25
Untouched nature	Forest landscape (snow + bare ground)			A					19
	Nature (incl. plants+ animals)			A					29
Landscape/appearance of the landscape	Snowy landscape (forest + mountains)		A	A				A	73
	Bare ground landscape (forest + mountains)	A	A	A				A	81
	Mountainous landscape (snow + bare ground)		A	A				b	57
	Forest landscape (snow + bare ground)		A	A		b		A	80
Σ obs		74	168	325	65	82	192	177	

Tenancy/ Non-wood/Wood.

Indirect dependencies were not distinguishable. However, a profile like Varied dependency, with few dependency statements and no obvious pattern regarding the 'rights to own and/or to use', possibly consists of more indirectly dependent UWps.

Certain trends that different LNR dependencies were associated with different dependencies on accessibility rights were apparent, for example;

'cultivable land' and 'wood resources' were combined with dependency on 'ownership' to a large extent, while dependency on 'lakes and water-courses', 'game hunting' and 'non-wood physical resources' were linked to statements of dependencies on 'the legal right of public access to private land'. The same types of LNR dependencies were in some cases, however, combined with different kinds of accessibility dependencies.

Table 4. UWps-activity frequencies in LNR dependency profiles. Profiles; V = Varied dependency, O/W = Ownership/Wood, O/N = Ownership/Non-wood, O/T/N/W = Owner-ship/Tenancy/Non-wood/Wood, O/W/L = Ownership/Wood/Landscape, U/L = Utilisation/ Landscape and M = Manifold dependency

Activity frequencies		LNR dependency profile						
		V	O/W	O/N	O/T/ N/W	O/W/L	U/L	M
		n=28	n=44	n=9	n=10	n=21	n=20	n=22
Marks per business category ¹	FAF ³	11	75	56	100	67	5	27
	Tourism ⁴	11	5	22			20	50
	Trade ⁸	21		11		5	45	9
	Service	32		11			15	9
	T/C ⁵	18	7		10	24	10	5
	RH ⁶							14
	M/P ⁷	11	7			5	20	
	Other ⁸	18	9				20	23
	Sum	121	102	100	110	100	135	136
≥ 2 different main business categories ¹ (% of n)		18	2		10	5	40	32
≥ 2 different main activity categories ² (% of n)		25	18	22	30	10	40	50
≥ 1 different secondary business categories ¹ (% of n)		36	20	33	50	38	30	45

¹ Business categories = groups of activity categories

² Activity categories = groups consisting of closely related activities

³ FAF = forest and/or agricultural farming

⁴ Tourism = board and lodging, arranged activities, service and transport focusing on tourists

⁵ T/C = transport of goods and/or contracting

⁶ RH = reindeer herding

⁷ M/P = manufacturing and/or production

⁸ Trade, Service and Other are business categories where the placement of single stated activities was not considered to be simplified by any further activity categorisation.

Business activity

Activities seemed to be a factor separating the profiles. Proportions of main activities within each profile were summarized in Table 4. Ownership/ Non-wood, Ownership/Tenancy/Non-wood/Wood, Ownership/Wood and Ownership/Wood/ Landscape mainly focused on forest and/or agricultural farming (FAF) activities. Utilisation/ Landscape focused on trade, Manifold dependency on tourism and Varied dependency on service. Tourism was, however, fairly common within Ownership/Non-wood and Utilisation/ Landscape, FAF in Manifold dependency, trade in Varied dependency and transport/contracting in Ownership/Wood/Landscape. Furthermore, Varied dependency contained almost all types of activity in some abundance, although reindeer herding was only found in Manifold dependency.

The proportions of different businesses as well as activity categories (cf. Table 4) within the same UWps indicated fairly widespread occurrence of multiple activities. Multiple main businesses were most common in Utilisation/Landscape and Manifold dependencies and multiple activities within businesses were most common in Utilisation/ Landscape, Manifold dependency, Varied dependency and Ownership/Wood, although they were represented in all profiles. Secondary businesses were carried out by 33% of the UWps examined. They are presented simply as a proportion of the number of observations in each LNR dependency profile (Table

4), without specifying any business and activity categories.

The profile activity summaries are not definitive due to the difficulties inherent in using individual written statements. They could, however, shed light on the activity/LNR dependency linkages as well as the extent of multiple activities of UWps in different profiles. Even though a dominant business category was found in each profile: trade, tourism, service and (in four profiles) FAF businesses, five profiles actually consist of relatively large groups containing a range of different business categories.

Localisation

Localisation patterns of the different LNR/LNR access dependency profiles are presented in Figure 2. There was no major difference between the profiles (and thus the activities) with respect to their main geographical localisation. However, Ownership/Wood was found mainly in the forestland within the municipality. Manifold dependency was mainly found in the west and outside the municipality. The share of Ownership/Wood/Landscape and Utilisation/Landscape businesses was fairly evenly distributed among all the areas and even though Ownership/Non-wood and Ownership/Tenancy/Non-wood/Wood contained relatively few UWps, Ownership/Non-wood seemed rather widely distributed, while Ownership/Tenancy/Non-wood/Wood appeared slightly more concentrated towards the central parts of the municipality.

Figure 2. Localisation pattern: the share of UWps of different LNR/LNR access dependency profiles (pie chart segments) of the total number of UWps within the municipality carrying out activity (-ies) in each area. The number of UWps with an activity/activities located in the different areas is presented in the centre of each pie chart. Each UWp was allowed to select more than one area of localisation. Profiles; O/N = Ownership/Non-wood, U/L = Utilisation/Landscape, M = Manifold dependency, V = Varied dependency, O/T/N/W = Ownership/ Tenancy/Non-wood/Wood, O/W = Ownership/Wood and O/W/L = Ownership/Wood/Landscape.

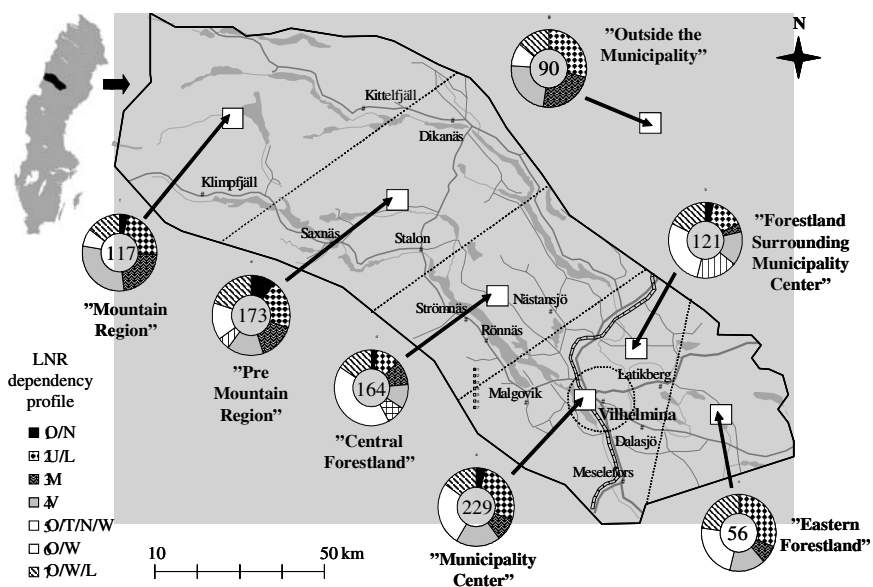


Table 5. Summary of the origin of customers with respect to LNR dependency profiles. The reason for profile totals exceeding 100% is that multiple answers were allowed. Profiles; V = Varied dependency, O/W = Ownership/Wood, O/N = Ownership/Non-wood, O/T/N/W = Owner-ship/Tenancy/Non-wood/Wood, O/W/L = Ownership/Wood/Landscape, U/L = Utilisation/ Landscape and M = Manifold dependency

Location	V	O/W	O/N N/W	O/T/ n=10	O/W/L n=21	U/L n=20	M n=22	
	n=28	n=44	n=9					
	Vilhelmina	57	61	78	70	62	40	23
	Surrounding municipalities	18	11			19	30	9
Main origin of customers	N. Sweden inland/mountain region	21	23		30	29	55	45
(% in profile)	N.Sweden coastal region	21	50	33	50	33	40	64
	S.Sweden and other countries	29	2	22	20		30	45

Markets

With respect to the location of customers (Table 5), the results indicated “local” dominance for more or less all profiles. Generally, most customers were located in the northern parts of Sweden. However, Manifold dependency, which contained most tourism businesses, tended to serve customers from locations somewhat further away and Utilisation/Landscape seemed to reach all “markets” quite evenly.

Engagements

There seemed to be some differences between the LNR/LNR access dependency profiles with respect to people engaged (Table 6). Overall, full-time year-long engagement dominated. The greater proportion of engagement opportunities were, however, found in Utilisation/Landscape and Manifold dependency and in Varied dependency, which had the most engagement opportunities, irrespective of type. In contrast, the four remaining profiles, especially Ownership/Wood, engaged relatively few people in relation to the number of UWps. Ownership/Wood engaged the most people on a part-time year long basis, while Owner-ship/Wood/Landscape engaged people on a full-time year long and part-time seasonal basis.

Proportions of people engaged per LNR/type of

LNR access were compiled by relating all engagement opportunities stated within UWps to each LNR/LNR access dependency stated by the same UWps (Table 7).

According to the proportion of the total number of people engaged within the target population (the last column), most engagements were associated with ‘snow and frozen ground’, ‘game-hunting’ and the ‘municipality landscape’. The category ‘physical resources/raw materials’ supported a relatively high number of engaged people as well. From the perspective of extent of engagements (columns 3 to 6) and aside from the LNRs/types of LNR access generally associated with high levels of engagement, the ‘legal right of public access to private land’ and the LNR ‘hard krock and gravel’ contained a relatively high number of people engaged on a full-time basis.

Discussion

The LNRs/types of LNR access listed in the questionnaire seem relevant in number and type, since the respondents did not totally ignore any of them, neither did they add many further alternatives.

LNR and LNR-access dependency

The total number of marks in each profile was naturally affected by the number of profiles and by

Table 6. Numbers and proportions of people engaged in the UWps in each LNR dependency profile. Profiles; V = Varied dependency, O/W = Ownership/Wood, O/N = Ownership/Non-wood, O/T/N/W= Owner-ship/Tenancy/Non-wood/Wood, O/W/L = Owner-ship/Wood/Landscape, U/L = Utilisation/ Landscape and M = Manifold dependency

Extent of engagement	People engaged/engagement extent category in the UWps of LNR dependency profiles (% of # of people engaged/engagement extent category)							Σ # of people engaged (in n=154)	Σ # of people engaged in VMA ¹ (in n=665)
	V n=28	O/W n=44	O/N n=9	O/T/ N/W n=10	O/W/L n=21	U/L n=20	M n=22		
Full-time all-year	29	3	1	4	13	21	29	187	808
Full-time seasonal	53	11	4		6	23	2	47	203
Part-time all-year	32	28	4	6	7	13	10	138	596
Part-time seasonal	41	3	5	4	16	12	18	73	315
% of Σ # of people	34	12	3	4	11	17	18	445	1922
# of people/ UWps	5	1	2	2	2	4	4	3	3

¹ VMA = Vilhelmina

the profile itself, since the number of statements affected the proportion of individual observations. Another circumstance of significance is that direct and indirect dependencies were not distinguishable, as this was not the scope of this study. However, based on the results the profile Varied dependency, with few dependency statements and no obvious pattern regarding the 'rights to own and/or to use', possibly include most of the more indirectly dependent UWps.

The existing property rights system seemed to make possible co-dependency and probably co-utilisation of different types of LNRs. It was impossible to determine the advantages and disadvantages of establishing a LNR dependency associated with different types of rights. Nevertheless, different commercial activities depend on the same LNRs, but are based on different rights of

access, (including the "common rights" of 'the public right of access' as well as formal land use agreements and ownership). This indicated that changes concerning the "rights", which in Sweden primarily are controlled by national laws and regulations (Bengtsson 1999), will affect many UWps and thus the local economy, in a municipality like the one studied. Regulations affecting accessibility and any changes to them can be assumed to be a source of conflict as well as of opportunity (cf. Slee 2006).

Business activity

Despite the simplifications involved regarding the profile activity summaries (Table 4), it can be assumed that business categories and, thus, activity categories can be linked to certain LNR/LNR access dependency patterns. Explaining the reason for the distribution of the FAF business category over five

Table 7. Proportion of people engaged in LNR dependent UWps reported per LNR/type of LNR access. The same engagement opportunities may be counted multiple times depending on how many LNRs each UWps has marked as important for their activity/activities. The population engagement totals (in VMA = Vilhelmina) are presented at the bottom of the table

LNR Category	LNR	LNR based engagement (LNR-b.e.) (% of total # of people engaged/ engagement extent category)				LNR-b.e. (% of # of engaged in VMA)
		full-time all-year	full-time season	part-time all-year	part-time season	
Rights to own and/ or to use	Ownership	14	36	60	66	39
	Tenancy	6	4	14	15	10
	Prescription from time immemorial	5		4	3	4
	public access to private land	45	26	25	37	36
	Cultivable land (incl. forest)	29	26	51	26	35
Type of land/ land use	Hard rock and gravel	51	13	23	4	31
	Wetlands	9	28	8	18	12
	Lakes and watercourses (for fishing etc.)	39	23	21	40	32
	Groundwater	11	17	9	4	10
	Wind	30	13	4	11	17
Physical resources/ raw materials	Snow and frozen ground	65	68	46	92	64
	Game hunting	52	45	35	77	50
	Non-wood physical resources	42	40	36	52	42
	Wood resources	56	30	54	29	48
	Snowy lands (forest + mountains)	27	2	9	15	17
Untouched nature	Bare grounds (forest + mountains)	30	28	13	45	27
	Mountains (snow + bare ground)	34	28	11	47	28
	Forestland (snow + bare ground)	25	2	9	18	16
	Nature reserves (incl. plants + animals)	30	23	12	51	27
	Snowy (forest + mountains)	63	55	33	73	55
Landscape/ appearance of the landscape	Bare ground (forest + mountains)	65	60	41	52	55
	Mountainous (snow + bare ground)	56	26	30	44	43
	Forest (snow + bare ground)	61	43	51	44	53
# of people engaged (in n=154)		187	47	138	73	445
# of people engaged in VMA (in n=665)		808	203	596	315	1922

of the seven profiles is beyond the scope of this study. However, the fact that there were differences in LNR/LNR access dependency within the same business category and that multiple business categories were found in most of the profiles indicates the value of the LNR perspective on commercial activities from a local community point of view. It is not necessarily optimal to consider and to plan for local business structure based on type of activity (branch) as is often the case today. There might be greater benefits in looking into the prerequisites for businesses in general, which are obviously not just financial but to a large extent regarding LNRs and LNR access as well.

The purpose of multiple main activities within UWps can be assumed to be to tie customers to the enterprise (perhaps most often in the case of different businesses categories within the same UWps), as well as to preserve a year-round income (or at least for most of the year), or simply to fulfil a personal desire (cf. Bergqvist 2004; 'the independent life mode'). The level of importance of secondary businesses is impossible to estimate, but since they are a part the totality, it can be assumed that they are significant in terms of the enterprise stability over time (cf. Thellbro & Lidestav 2006), which more or less includes economic stability, as well as for entrepreneur satisfaction, even though their practical contribution to the business may be limited.

Based on the stated activities, more or less direct LNR/LNR access dependencies can be assumed for most profiles. However, with respect to trade and service UWps (profiles Utilisation/Landscape and Varied dependency), for example, it is likely that dependencies are mostly indirect since these business categories can be expected to serve customers using the stated LNR and/or right to its use. In such cases, it can be assumed that changes in LNR availability and accessibility of any kind could cause significant extended effects. A change in availability could, for example, affect the number of local customers because of a reduction in visitor numbers, thus significantly affecting the local economy (cf. Paajanen 1994 and Bodén & Rosenberg 2004).

Localisation

The localisations seem reasonable considering the activities practised and the fundamental prerequisites associated with them. However, with reference to the overall distribution and earlier results based on

the same survey (Thellbro & Lidestav 2006), they are as likely to be explained by the fact that people create something to do where they want to live, rather than move to a place where there is an existing activity "available" or to start a particular business. There is reason to assume that the choice of municipality is in fact a choice of specific location within a municipality (Nordström & Mårtensson, 2001).

The wide variation associated with the geographical localisations of the LNR/LNR access dependency profiles, and thus of virtually all types of activities identified in this study, suggests that a local strategy for small businesses and the area's economic development should not focus on different businesses in different parts of the municipality. Rather, the focus should be on examining ways to optimize different business prerequisites, including the LNR availability, for every type of small business activity and small business network across the entire municipality. There is a requirement to strengthen local businesses and to meet the needs of inhabitants as well as visitors (cf. Paajanen 1994 and Bodén & Rosenberg 2004).

Markets

Profiles consisting mainly of FAF UWps were expected to identify the coastal region of northern Sweden for their main market, since most sawmills and pulp-industries are found in that region. Perhaps the forest owners sell most of their timber to the local sawmill, however, there is no pulpwood market in the inland areas. It is interesting to consider who the forest owners consider to be their customers – a national forestry corporation, the regional forest owners' cooperative or the local procurer?

The obvious need for a local market suggests that, in theory, local government has considerable potential to affect and support local businesses. The strong link between the entrepreneur and the municipality (Thellbro & Lidestav, 2006) as well as the local base (the LNR/LNR access dependency) and local market, suggest a business structure that should be comparatively straightforward to examine and strengthen by, for example, offering arenas for entrepreneurs to meet and to expose themselves on. It should be relatively easy to achieve positive effects compared to large externally based corporations and businesses with external markets. In addition, in a rural boreal municipality the local government is one of or even the main employer as

well as an important purchaser of locally produced goods and services, which makes it an important part of the local market. It should further be possible for local businesses to expand their market. This depends however, for example (based on life mode theory) on the attitudes, motivations and goals of the existing local businesses entrepreneurs as well as potential entrepreneurs (Theellbro & Lidestav, 2006). There are of course many different aspects and theories on local entrepreneurial development, but it should, in any case, be actively explored and it could most likely be supported by local government through societal planning, marketing aid etc.

Engagements

The results obtained regarding engagements suggested that relatively few UWps engage a relatively large number of people. They further suggested that numbers as well as extents of engagements are linked to the business activity carried out.

‘The legal right of public access to private land’ was important in the profiles Utilisation/ Landscape and Manifold dependency, which comprised businesses likely to require extensive engagements. Multiple business enterprises, due to their nature, could also be assumed to facilitate full-time engagement. Seasonal part-time engagement opportunities were often associated with; ‘ownership’, untouched bare-ground and mountainous landscape, as well as ‘nature reserves’. This could be linked to the fact that ‘ownership’ was important in the FAF businesses (especially NIPF businesses) and in ‘untouched nature’ LNRs it was associated with tourism activities, which can be placed among the seasonally dependent activities. Overall, however, these numbers were relatively low: there were few (less than 50%) part-time seasonally engaged people compared to the number of people engaged in year long full-time and part-time work. The fact that ‘Ownership’ and ‘cultivable land’ accounted for the most part-time year long engagements is probably due to the large number of FAF businesses (mainly NIPF businesses), which are often additional activities for the entrepreneur in terms of engagement (cf. Törnqvist, 1995).

Double counts, regarding Proportions of people engaged per LNR/type of LNR access, due to multiple LNR dependency statements can be misleading; it was impossible to assess the contribution from an individual LNR/type of LNR access

to the engagement opportunities based on the information in this survey. The numbers, however, indicated potential quantities and relations between different LNRs/types of LNR access regarding engagement quantities linked to them. Example; If there would be any kind of change in the availability regarding the non-wood physical resources, that might affect as many as 42% of all the full-time, all-year engagement opportunities found (808 opportunities) in the small-business population of Vilhelmina.

Despite the limited monetary benefits engagements might offer individuals and the municipality in relation to official employments (cf. Theellbro, 2006) the overall level of engagement reported in this study can be seen as an indication of the sensitivity of commercial activities and thus the local economy, if there were changes in the accessibility of certain LNRs. Application of such knowledge, along with other general as well as local understandings and facts regarding local economy and development, more or less related to this, could be valuable when considering a local strategy for small business and economic development. As an example local planning and construction of holiday camps and infrastructure etc. could improve as well as reduce possibilities for small business entrepreneurs to stay and to carry out their business(es).

Conclusions and implications

The stated high LNR dependency among the respondents indicates that the LNR perspective on local commercial activities is a valuable approach in terms of understanding some of the fundamental prerequisites and circumstances influencing local business structures and, thus, the economy of a rural resource community as the Swedish rural boreal municipality. Further, clear similarities and differences between and within the seven LNR/LNR access dependency profiles with respect to activities, geographic localisations of activities, customers and engagements were identified. These factors are all relevant in the process of maintaining and developing the Swedish rural boreal municipality as a local resource community.

Regarding LNR access and property rights in Sweden today; decisions concerning laws and regulations are primarily a matter for the national government. Concerns about their effects must, however, be of significance in societal planning for development of small businesses in general and in particular for a

community like the one studied, where the LNR/LNR access dependency among commercial ventures is such an important factor. As an example, the development regarding the “commercialisation” of ‘the public right of access’, in relation to formal land use rights, must be seen as an important matter. ‘The public right of access’ implies restrictions to the ownership rights regarding the owner’s possibilities to hinder people from and/or to charge them for “benefiting” from many of the physical natural resources as well as services found on private land. Further, it may be an advantage for enterprises as they (to some extent) can use other peoples land for their own commercial purposes. At the same time, it may be hard to charge clients for something that they can get for free. Related to this, an extended understanding about how different business and/or commercial activity categories use LNRs, and when they do so, might be useful for the local government. Designing a local strategy for decision making and planning; to prevent and solve conflicts and to identify, characterise and promote cooperation, including finding new niches where new entrepreneurs can establish businesses and where existing entrepreneurs, if they are interested (with regard to the life mode theory), can expand their businesses, are examples of situations where such knowledge might be of great value.

Due to social changes, the use of LNRs is likely to have changed throughout the history of the different types of resource communities. However, with respect to the rural boreal municipality, it has been demonstrated that there is still a key dependency on LNRs and the access to them. It can be assumed that LNR/LNR access dependency is strongly rooted in the rural boreal municipality culture and that it will persist, although possibly in different forms, as society changes. Links between the municipality itself, the inhabitants and local businesses have been shown to be extensive. Therefore, a LNR/LNR access dependency perspective on small businesses (based on for example the concept of de Groot’s (1992) ecological functions as a new way of defining natural resources utilisation) could be a powerful tool to be used by the local government of a rural boreal municipality or any local resource community. It could elucidate the effects of proposed actions and highlight geographical as well as theoretical areas on which to focus activity. Further, it could suggest measures to take to encourage the development of small businesses and to strengthen the local economy.

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