

# WILD REINDEER AND PLANNING IN THE RONDANE REGION

**"Reinventing the commons"**  
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By  
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If you have seen any reindeer during your stay in this part of Norway it may be disappointing that it was not a wild reindeer. And to make it clear: You will not see any wild reindeer in Northern-Norway - all reindeer here are domesticated. In Norway wild reindeer are found in the mountain regions of Southern-Norway.

The distinction between domestic and wild reindeer is important, but obviously they belong to the same subspecies: *Rangifer tarandus tarandus*, the mountain reindeer. This paper concentrates on *wild reindeer* as a common property resource and how problems connected to this resource have led to a reinventing of the commons. This is exemplified by the Rondane region and regional planning.

According to Berks and Taghi Farvar (1989) understanding of common property resources has to distinguish between the *resource* itself and the *property-rights regime* under which it is held. This is also the point of departure of my paper and I will start by characterizing wild reindeer and their adaption to the environment and the property-rights regime they depend upon.

## 1 Wild reindeer and its adaption to the environment

Wild reindeer are a nomadic species which utilize the environment extensively. No other herbivore in the Norwegian mountains utilizes the sparse resources as efficiently as wild reindeer. Its traditional adjustment to the environment is migration between those parts of the mountain that give the most abundant supply of nutritious plants at different times of the year. Migration by fixed routes is therefore part of a cyclus that knits together core areas with the best possibilities to survive (Skogland 1991). This includes roughly:

- *winter areas*, ideally with little snow and easy access to lichens
- *spring areas and calving grounds* includes areas with early snow melting
- *summer areas*, which ideally have a rich abundance of herbs. In summer insects can be a problem and reindeer prefer areas with snow patches for escaping from the insects
- *autumn areas and rutting areas*.

At the beginning of the 1990s there were about 32 000 wild reindeer in Norway (Skogland 1994). In 1990 9 700 wild reindeer were killed during the hunting season (August - September). Figure 1 shows the wild reindeer areas in Norway (all in Southern Norway).

Wild reindeer herds in Norway can be placed on a scale regarding genetic difference. At the one extreme are the wild reindeer in Rondane and Snøhetta areas, which are the last remnants of the original wild European mountain reindeer. They are genetically unique. Wild reindeer at the other extreme are genetically closer to domestic reindeer. This difference is seen in their adaption to man. Original wild reindeer are shyer than other wild reindeer, and the original wild reindeer in Rondane are among the shyest in Norway. The differences in shyness are probably a combined effect of different gens and a varying adaption to man (Reimers 1995).

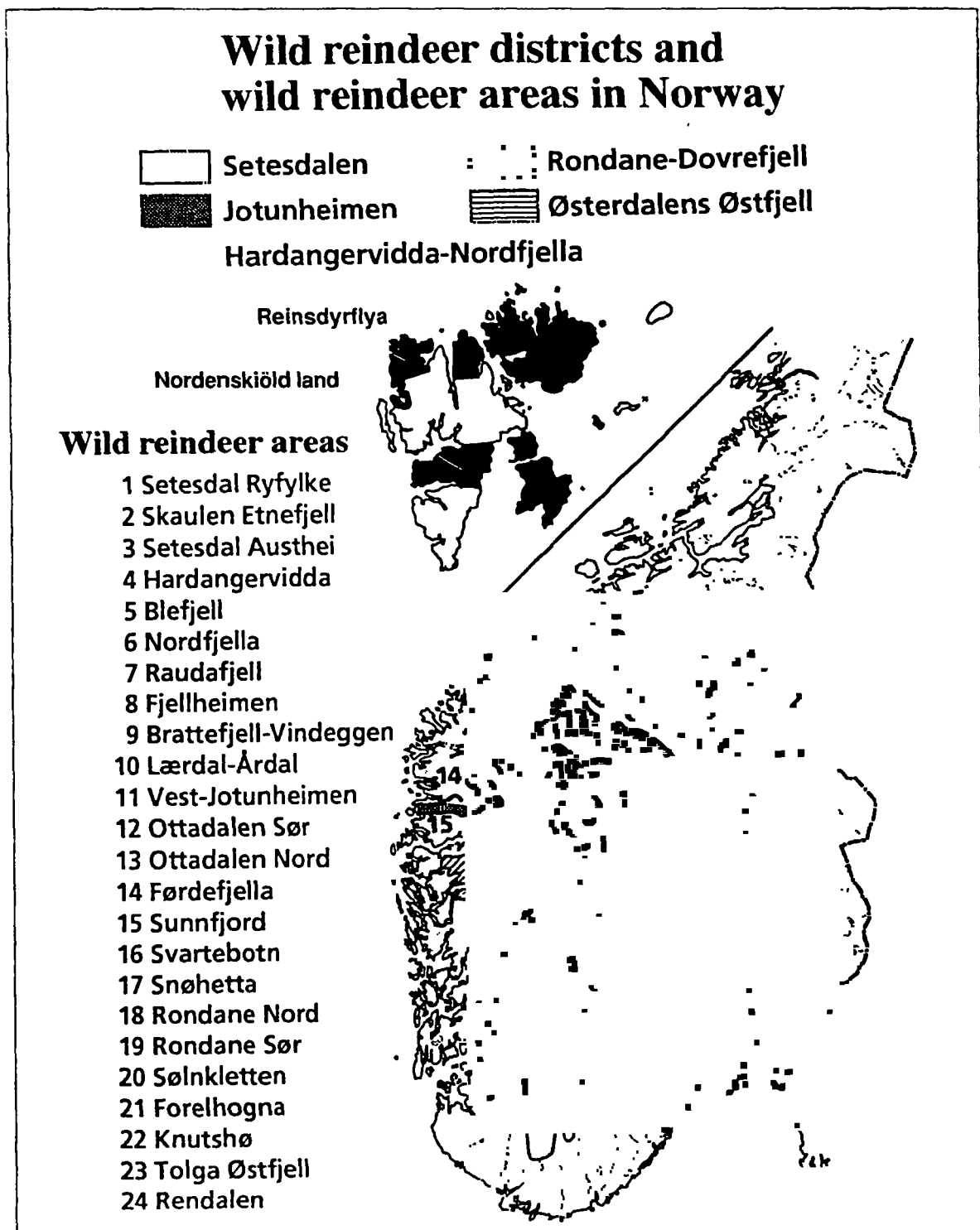


Figure 1. Wild reindeer areas in Norway.  
Source: Skogland (1994).

## 2 The property-rights regime

The property-rights regimes involve both the property-rights to the animals, and the rights to the ground.

No one owns wild reindeer, but the land they depend upon may be state property, private property or communal property. Every municipality with state property elects a mountainboard to take care of citizen privileges on the state ground. The mountainboard are together with private persons and communal interests given the privilege of selling hunting licences. The wild reindeer areas are so large that no single owner controls a total area, and they usually cover several municipalities.

The number of hunting licences given to those with privilege depends upon their share of the mountain area used by the reindeer and the size of the herd. Private owners can keep their hunting licenses for themselves, but in most cases their licences are sold. The mountainboards sell all their hunting licences at fixed prices, and usually the inhabitants in each municipality have priority to these licences. The municipalities, and especially the hunters in the municipalities, should therefore be interested in managing the reindeer and the forage areas sustainably. Drawing of lots is a usual method of distributing licences within a municipality. Hunting wild reindeer is very popular.

Most wild reindeer areas have a board with representatives from those privileged to sell hunting licences. This type of board is called "villreinutvalg", and they make *proposals* about quotas and long-term management of the herd, manage the hunting licences and conduct countings of animals (Jaren 1990). They have *no* formal responsibility for spatial planning in wild reindeer areas, but are often allowed to make statements about spatial planning.

Spatial planning at the superior level in the mountain areas is a municipal task and is executed according to the planning and building act by Municipal Master Plans. Within the limits of the Master Plan owners of the ground may propose Local Development Plans. Plans according to the Planning and Building Act are legally binding.

In 1988 a new type of committee was founded - the "villreinnemd". It is stated by law that every wild reindeer area shall have such a committee. Each municipality within the wild reindeer area elect one person to the committee. This committee has the *formal* responsibility for the quotas and long-term management of a wild reindeer herd and they shall make statements about spatial planning (Jaren 1990).

Summarized, the property-rights regime for Norwegian wild reindeer herds is a complex matter. It is probably correct to state that most wild reindeer herds in Norway are a mixture of private, open-accessed, communal and state property, but with increased significance on the municipal level. According to Berks and Thagi Farvar (1989) and Gibbs and Bromley (1989) most property-rights regimes are a mixture of different types of property-rights. Therefore the situation described is principally not uncommon.

or the municipality

### 3 Rondane: The region and the wild reindeer herds

#### **Rondane: Situation and Topography**

As shown in figure 1, the Rondane region is situated centrally in Southern-Norway. Figure 2 shows that the region stretches from the mountain areas in Hamar municipality in the southeast to Dovre in the northwest, a distance of about 150 km. The region is "long and narrow", which makes it especially vulnerable to impacts and disturbance. The wild reindeer areas in the Rondane region are situated in 12 municipalities and 2 counties: In the west Oppland county and in east the Hedmark county.

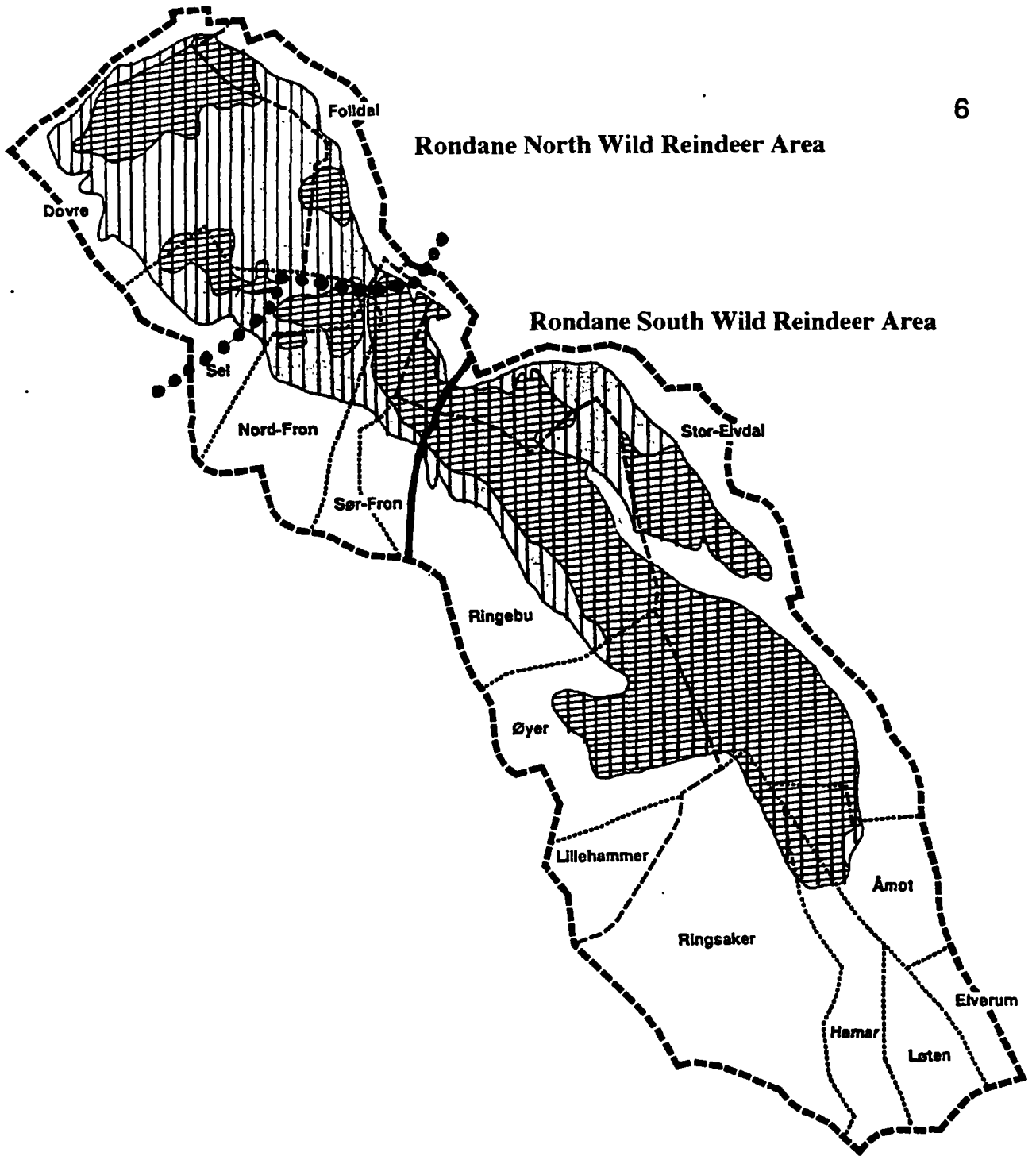
The topography of the northern and southern parts of the region is quite different. In the northern part, the Rondane North Wild Reindeer Area, the topography is rugged, with mountains up to 2000 meters and huge U-shaped valleys. This is most typical in the core area of Rondane National Park, where the Sniubelgin mountain massiv restricts the possibility to pass from north to south. This is a problem, because both out-door recreationists and wild reindeer only have 3-4 possibilities to pass through the massiv.

The topography of the middle and southern parts of Rondane, the Rondane South Wild Reindeer Area, is more gentle than in the northern part of Rondane. There is generally less precipitation in the eastern part of the region than in the western part, and less in the northern part than in the southern. Therefore the best winter forage areas are in the north and the east, and the best summer areas are in the west and the south. The southern part is characterized by many bogs and more water than the northern part of the region.

#### **Historical development of the reindeer herds**

In former times there was on huge herd of wild reindeer in the Rondane-Snøhetta area with summer and calving areas in the western parts closest to the coast and winter areas in the eastern and more continental areas. With the railroad over the Dovrefjell (Dovre mountains) and increased traffic on the road parallell to it, the disturbance at the beginning of this century had became so great that the traditional east - west migration stopped. The number of animals at that time was also low. That may have contributed to the cessation of the migration (Skogland 1991).

The wild reindeer in Rondane then lost their best spring and calving areas, their best summer areas, and best areas for escaping insects in the summer. They were restricted the whole year to areas, which from natures side are most suitable for winter forage. Although the Rondane region does not provide optimal conditions for wild reindeer, they have adjusted to the region. Figure 2 shows the distribution of wild reindeer in the summer at the middle of the -80s, and figure 3 shows the distribution of wild reindeer in the winter during the same years. Both figures are from the Rondane County Plan. The figures illustrate that different parts of the region are used at different periods of the year.



**Distribution of wild reindeer, summer**





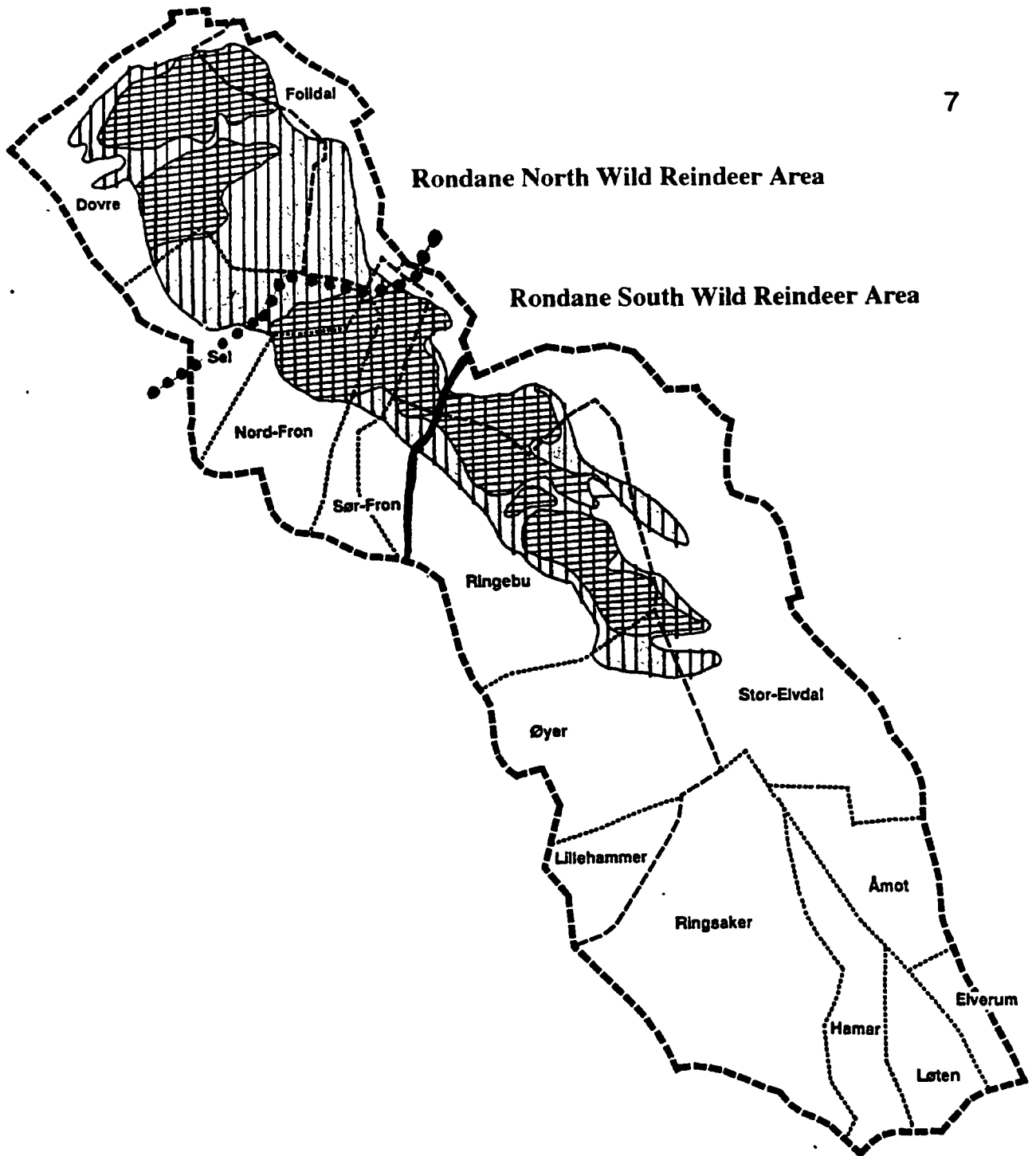
-  The limits of the Rondane region
-  Core area and other areas often used by wild reindeer (1985)
-  Areas accidentally used by wild reindeer (1985)
-  State road 27

Figure 2. Distribution of wild reindeer in Rondane in the summer, in the middle of the 1980s. Source: Rondane County Plan (Hedmark and Oppland Fylkeskommuner, after Bråtå 1985).



**Distribution of wild reindeer, winter**





-  The limits of the Rondane region
-  Core area and other areas often used by wild reindeer (1985)
-  Areas accidentally used by wild reindeer (1985)
-  State road 27

Figure 3. Distribution of wild reindeer in Rondane in the winter, in the middle of the 1980s. Source: Rondane County Plan (Hedmark and Oppland Fylkeskommuner, after Bråtå 1985).

The number of animals has changed throughout these years. Their distribution within the region has also been uneven. In the late 1960s the animals concentrated in the most northern part of the region (Dovre), while the quotas were distributed among the municipalities in correspondence with their percentage of the total wild reindeer area. This led to severe overhunting in the middle and southern parts. In 1969 there were only 60 wild reindeer in these areas. After an agreement within the "villreinutvalg" the reindeer were protected against hunting until 1976. Today there are about 4500 wild reindeer in the region, which is the longterm management goal (Bråtå 1986, Oppland and Hedmark Fylkeskommuner 1991).

The overhunting in the late -60s is a classical example of the "tragedy of the commons" (Hardin 1968), because the representatives from every municipality wanted as high quotas as possible, even though few animals were registered in some municipalities. One of the men who wanted high quotas told me some years later that: "we were too greedy". Throughout the 1970s, 80s and until now the management of the herds has become better. The "tragedy of the commons" regarding size of the herds, their sex and age ratio, and the quotas was then mostly solved. It was solved through regional cooperation within the "villreinutvalg", but a crisis was needed before the problem was taken seriously. This is interesting because Gross (1965) states that a crisis often preludes improvements in planning.

A crisis was also needed before the first Norwegian "villreinutvalg" was founded in the Snøhetta-region in the 1960s. The background there was contrary to Rondane some years later: The quotas in Snøhetta were too small, which gave too many animals, too small animals and severe overgrazing. In that case local people wanted higher quotas, but the Ministry of Agriculture did not agree upon that. The Ministry had to change its mind and between 1961 and 1963 the number of wild reindeer in Snøhetta were reduced by 12 000 (Heitkøtter 1981, Hansen 1987).

In Rondane it appears that the question regarding the number of animals, and the sex and age composition of the herd, is under some kind of control. The big remaining problem in the region is how to solve the conflict between existing and proposed impacts (and disturbance), and maintenance of sufficient areas for forage and free passage for migration. This has been a problem for several years, and I will briefly describe the impacts and the effect they have had on the wild reindeer.

#### 4 The impacts in the region

The Rondane region is known as a beautiful area and its popularity has grown since the start of tourism at the late 1800-century. The growth in the number of new private cabins, hotels, tourist cabins and visitors took off in the late 1950s and early 1960s. The popularity of the region as a recreational area was one of the reasons for establishing Norway's first national park in Rondane in 1962 (Bråtå 1986).

There are about 11 300 cabins in the region, and at least 4100 more are planned, figure 4. There are about 11 400 beds in hotels, tourist cabins etc. Most of the hotels and



cabins are located at the western side of the mountain area (Hedmark and Oppland Fylkeskommune 1991). People from these areas pose a heavy impact on the areas suitable for wild reindeer and the conflict between proposed cabins and potential impact on wild reindeer is classical in the Rondane region.

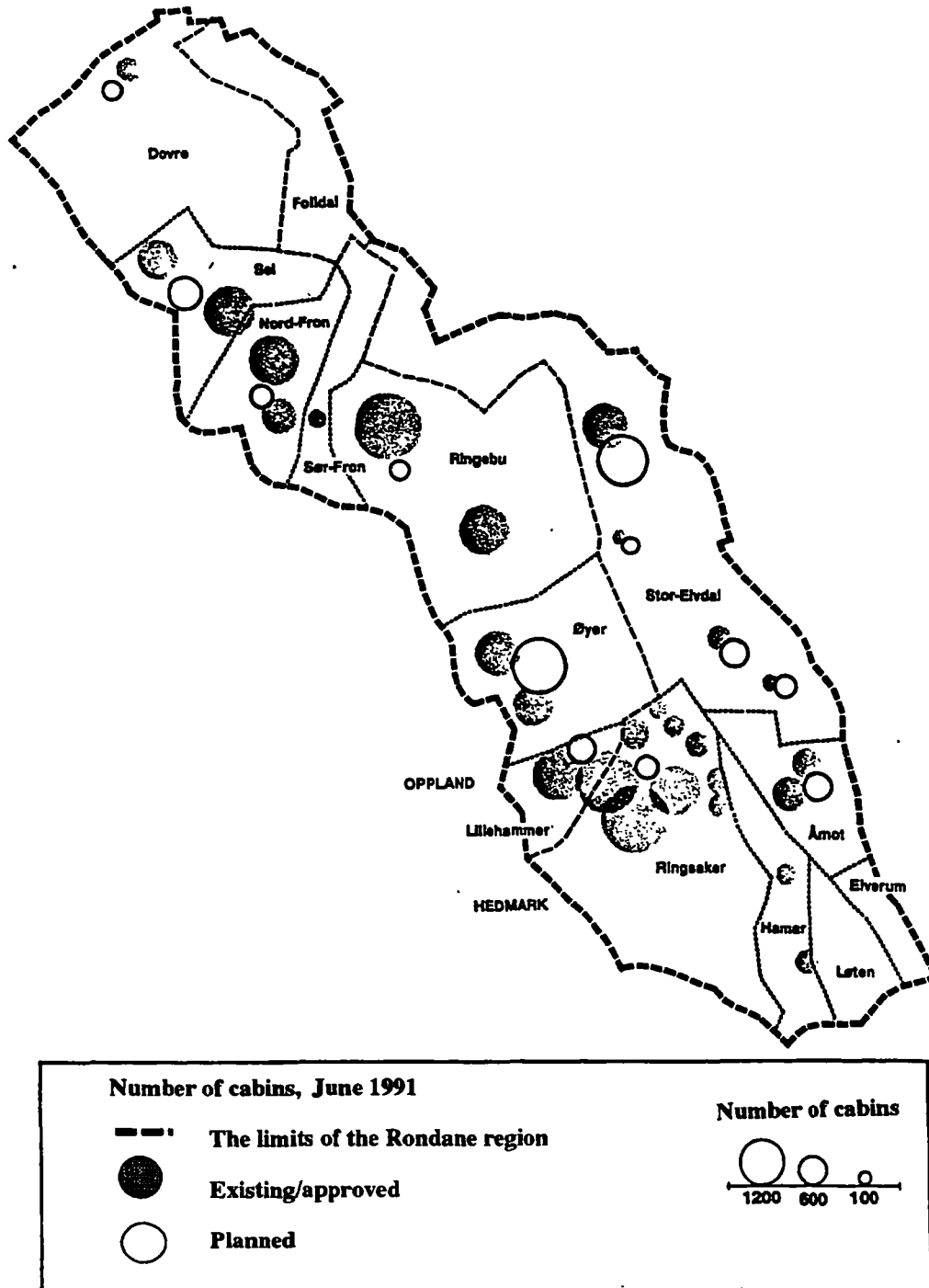


Figure 4. Cabins in the Rondane region.  
 Source: Oppland and Hedmark Fylkeskommuner (1991).

The tourist cabins are situated centrally in the mountains. Between the early 1920s and 1994 the number of beds in tourist cabins north of state road 27 increased from about 60 to about 520. During these years the number of visitors at three of the tourist cabins Bjørnhollia, Grimsdalshytta and Rondvassbu increased from 225 to 24 000.

In the summer the region is crossed by four roads, and roads penetrate the region from east and west. Until the last few years none of the roads crossing the region were open in the winter, but after much conflict the state road nr. 27 across the Ringebufjellet was opened in the winter season. This road crosses one of the most important migration routes in Rondane, especially in the winter.

Figure 5 shows that since 1962, when Rondane national park was established, roads have even been constructed in and close to the park. The result is diminishing wilderness areas and it is obvious that new roads have had negative effects upon wild reindeer (Bråtå 1986, 1989).

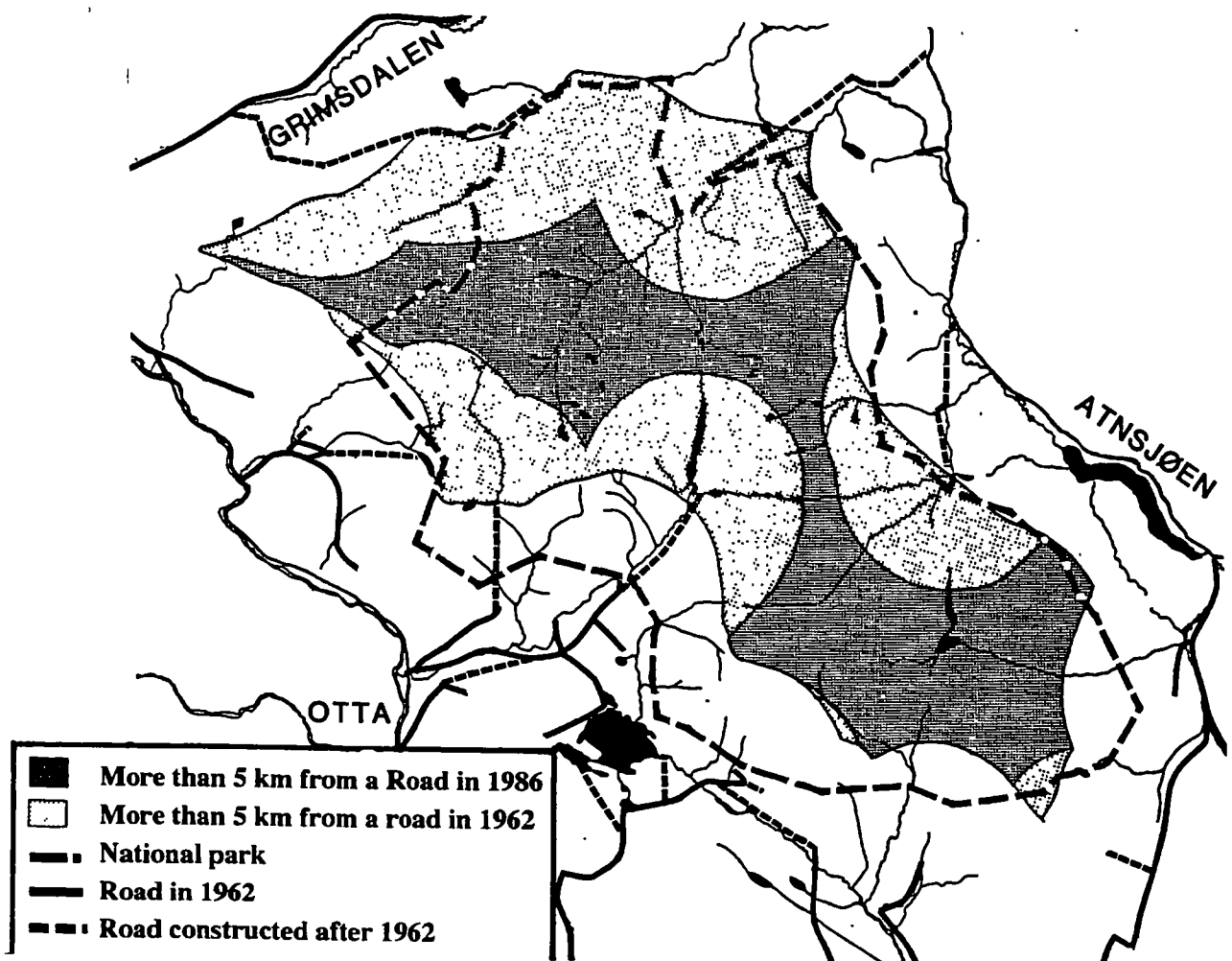


Figure 5. Rondane National Park: Areas more than 5 km from a road in 1962 and 1986. Source: Bråtå (1989)

A system of marked trails summer and winter makes it easy to use the Rondane region for recreational purpose.

From the 1970s, the winter season at several tourist cabins has been prolonged. The biggest tourist cabin in Rondane, Rondvassbu, was in 1994 open from February 24<sup>th</sup> to April 17<sup>th</sup>. The summer season has not been prolonged much, and is from the middle of June to September. The first self service tourist cabin in Rondane, Eldåbu, was opened in 1965.

Altogether this development has led to more visitors in Rondane and visitors coming further into the mountains than without new roads. Through a prolonged season people are visiting Rondane over a longer periode of the year.

## 5 How are the reindeer affected by this development ?

Historical studies show an increase in the facilities for outdoor recreation and tourism (cabins, hotels, tourist cabins, roads and marked paths and trails), but in general wild reindeer are not affected by the facilities themselves. What affects them is the huge increase in persons using the facilities. Reindeer are afraid of the hiker, not the marked footpath it self. Reindeer are also afraid of motoriced vehicles, but not as much as of human beings. The worst effect of roads is that people start their hiking further into the mountains and closer to the reindeer areas, than without roads (Reimers 1995).

Although more people are visiting Rondane, most people follow marked trails, both summer and winter. This leaves a few areas quite undisturbed. Comparision of the recreational pattern and the areas used by the wild reindeer at different seasons show that reindeer prefer undisturbed sites (Bråtå 1986).

It is not possible to prove in every detail how the wild reindeer in Rondane are affected by human disturbance. However it seems quite clear that the topography of the region and disturbance from humans are the main keys to understand why wild reindeer have changed their areas, and why some areas and migration routes now are abandoned. These questions are complicated by the nomadic behaviour of the reindeer and their long-term cycles (possibly 20-30 years) in use of forage areas.

Regarding the longterm effect of the impacts and disturbance from man it is feared that continued disturbance may lead to a negative energybalance that over the years lower the productivity of the herds. If forage areas are abandoned because of human activity, adjustment between accessible forage areas and the size of the herd will lead to fewer animals. It is also feared that human impacts may cut migration routes and isolate the herds in minor areas with few animals, which may lead to genetic degradation.

## 6 Need for regional planning

As exemplified in figures 2 and 3 wild reindeer depend upon areas in several

municipalities in the Rondane region, and migration routes between these areas. The problem is that most impacts and the following disturbance are planned in the municipalities without estimating regional effects of the impacts. If these impacts are negative for the reindeer, planning in one municipality may be a problem for all municipalities. An additional aspect is the severe problem in proving negative effects from single impacts, but over time lesser impacts may result in severe consequences. That is incremental planning at its worst, and is another example of the "tragedy of the commons".

The description above indicates that some municipalities are free riders. They want to increase the number of cabins in their municipality and at the same time register the cabin area as a wild reindeer area, which gives hunting quotas. Another typical example is municipalities which want new cabins in their mountains, but have objections if neighbouring municipalities also want cabins. This raises the question of binding regional planning where each municipality feels responsible for the whole Rondane region.

In the perspective of biodiversity it is important to note how Noss (1983) has emphasized biodiversity at the regional level - the *gamma diversity*. Gamma diversity is the total diversity of species in a region, and that diversity is dependent upon large undisturbed areas. According to Noss land-use planning at the regional level is the key to solve that problem. Skogland (1991) has stated that a main problem in Rondane is to prevent impacts that divide the region and the wild reindeer herds into small isolated herds and genetic depletion.

## 7 Regional planning in Rondane - an reinventing of the commons

The administration at the regional level in Norway is shared by the county municipality and the county governor. The county municipality is governed by politicians. The county governor represents the state.

It is not possible to ascertain when wild reindeer was reinvented as a regional resource. It was probably a gradual process. Anyhow, at the beginning of the -80s the consciousness in the "villreinutvalg" and by the county governors environmental division had come to a point where they wanted a report on the conflict between impacts (existing and planned) and the wild reindeer forage areas in Rondane. This report "Wild reindeer and impacts" was finished in 1985 (Bråtå 1985). It emphasized the importance of municipal planning in protecting wild reindeer as a regional resource.

According to wildlife managers the consciousness about wild reindeer as a regional resource increased because of the report. The report increased the use of comments and objections to plans, and has probably been favourable to secure the areas of interest for wild reindeer.

### **The first attempt to establish a cooperative planning in Rondane**

In 1987 Ringebru municipality, which is situated centrally in Rondane, contacted the

other municipalities in the region in order to establish cooperative planning in Rondane and thereby protect the areas of interest for wild reindeer. Some of the municipalities answered the invitation, and were interested, but some municipalities in the northern part of Rondane did not even answer the invitation. Their reluctance was probably caused by a fear of not being "allowed" to continue construction of i.e. cabins in the mountains.

Meanwhile the conflicts in Rondane reached a peak as Stor-Elvdal municipality proposed a plan to develop an area with a ski-lift and many cabins. At the same time the proposals for winter opening of state road nr. 27 were intensified. That opening was especially advocated by the municipalities Ringebu and Stor-Elvdal. These proposals lead to massive protests from "villreinutvalg", other NGOs and the environmental division at the county governors in Hedmark and Oppland. These institutions feared negative impacts through human disturbance in the important winter forage areas and that the migration across the state road would stop. The county governor in Hedmark made an objection to the planned ski-lift and cabins in Stor-Elvdal. The proposed plan was put before the Ministry of Environment for a decision. The Ministry rejected the plan, but decided that there should be a county plan for the Rondane region in the counties of Hedmark and Oppland.

#### **The Rondane County Plan**

County plans are drawn up by the county municipality with reference to the Planning and Building Act. They are binding for the county municipality and serve as a guide to the municipalities and state institutions, i.e. the county governor. The county municipality can justify objections to municipal plans by the conflict with county plans. County plans are naturally favoured by the county municipality, but have traditionally been met with suspicion from other instances because of lack of authority.

It is still uncertain why the Ministry of Environment in 1990 decided upon a county plan instead of "national objectives for planning" or a large expanding of the Rondane National Park. In 1995 the Ministry actually proposed a large expanding of the Rondane National Park.

However, the drawing up of the Rondane County Plan started in 1990. The main purpose was to decide which areas were allowed to be developed and which areas were to be protected in favour of wild reindeer, under the main goal of protecting the wild reindeer areas. The Ministry of Environment grounded the need for a plan in the work for sustainable development and Norway's international obligations to maintain biological diversity.

The Rondane County Plan was adopted by the county municipalities in Hedmark and Oppland in November 1991, and approved by the Ministry of Environment in October 1992. The planning process, the plan itself, the implementation of the plan and its effects are now being evaluated at our research institute. The evaluation will be published this autumn. This county plan is of special interest because it is the first Norwegian attempt to protect the areas of interest for wild reindeer through a coordinated political process on the county and municipal levels.

## 8 Conclusion

The development in Rondane is a classical example of "the tragedy of the commons", and it is a tragedy both regarding the management of the herd itself and the ground they depend upon. I am pleased to inform you that the problems in management of the herd are partly overcome. They are solved through cooperation within the "villreinutvalg". It is still not possible to relax, because increased passage of wild reindeer between the two wild reindeer areas pose new challenges and increases the importance of managing the wild reindeer in Rondane as part of one herd. This raises a question concerning new institutional arrangements regarding management of the herd.

The problems relating to management of the ground, in other words the forage areas and the migration routes are not solved. From the 1980s and onwards there has been a growing recognition of wild reindeer as a common regional resource, and it has been an reinventing of the region as a commons for planning. This culminated with the drawing up of the Rondane County Plan, but the problems before the acceptance of the plan, and since it was approved, are on the municipal level. It is the municipalities that make decisions about impacts (and with that disturbance) in the region. Institutions at the regional level can make comments and objections to plans, but in the long run they depend upon municipal good-will to take the problems regarding the wild reindeer seriously. I believe that the situation in Rondane is especially difficult because the wild reindeer there are very shy, which puts extra limitations on what is acceptable to them.

I will end this paper by pointing to the really difficult problem, namely the lack of integrated management of the herd and the ground they depend upon. The "villreinnemd" as an institution may be a step in that direction, especially if a "villreinnemd" for the whole Rondane region is established..

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