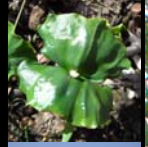



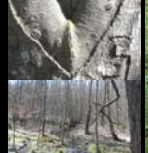


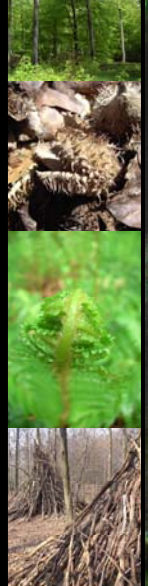

POTENTIAL CONFLICTS BETWEEN RECREATION AND NATURAL VALUES IN TORUP

-A NOBLE BROADLEAVED FOREST IN SOUTHERN SWEDEN

TOVE HULTBERG

URBAN FORESTRY AND URBAN GREENING MASTER THESIS 2007

SUPERVISOR MATTS KARLSSON, DEPARTMENT OF SOUTHERN SWEDISH FOREST RESEARCH, SLU ALNARP

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1. Preface

This thesis is a part of the Master of Urban Forestry and Urban Greening program at SLU, Alnarp, Sweden, and Copenhagen University, Copenhagen, Denmark. Supervisor has been Matts Karlsson, Department of Southern Swedish Forest Research, SLU Alnarp. The choice of topic is a result of an attempt to combine two important interests; recreation and ecology/nature conservation. Although much is known about the two topics respectively, not much research has been done on the possible clashes between them. Torup forest in southern Scania is an appreciated and very often used recreational forest, but also one of the most important habitats in Scania for red-listed saproxylic species, which made it a perfect area for a study of potential conflicts between the two topics. The area has also been suggested as a nature reserve. In this thesis, the emphasis has been on both present research, and own studies.

2. Abstract

The estate Torup in southern Scania, Sweden, was established in medieval times, and the broadleaved forest has a continuity of at least 400 years. Today, the area has the second most red-listed saproxylic insects in Scania, and the vegetation type (beech forest with abundant herb layer) is threatened. At the same time it is a frequently used, and a very appreciated recreational forest, mainly used by the citizens of Malmö. The forest lies app. 1.5 km from Malmö city centre, is owned and managed by Malmö municipality, and has recently been proposed as a nature reserve.

The main potential conflict is the one concerning the presence of dead wood, which is crucial as habitat for the concerned species, while percieved as un-tidy by some visitors. In the present study, most visitors were neutral or positive to dead wood, and very few other conflicts were found.

3. Introduction

Urban forests, social values and recreation

Approximately 67% of Sweden is covered with forest (FAO's definition) (second most forest/person in Europe), most of which is used for production of timber and pulp wood (Rydberg and Falck 1999, Rydberg 2001). The species distribution is 46% spruce, 39% pine, 10% birch and 5% others. Slightly more than 1%, (app. 3000 km2), is considered urban forests, < 1/3 of which is used for recreation, or as reserves (de Jong et al. 1999, Rydberg and Falck 1999). The Swedish Forestry Act of 1979 states that "the forest should be kept to give a good long term yield, while keeping biodiversity. Also other public interests should be considered in the management" (1§) (Anon. 1979).

The use of urban forests in Sweden

Swedes typically visit the forest every one to two weeks, more than half of the forest visits are made in urban forests, usually close to home or an outdoor structure (Rydberg and Falck 1999, Lindhagen and Hörnsten 2000, Rydberg 2001). This is somewhat higher than the figures for Denmark (≈ 0.7 visits/week in 1994) (Jensen and Koch 2004). School children visit forests much more than adults and retired people (Grahn and Stigsdotter 2003). Most frequent users are members of environmental organizations, and people living in rural contexts, while young people (16-30 years of age), and people living in urban dwellings are the ones using the forest least (Hörnsten 2000).

The importance of time and distance

For every day use in weekdays, 250 – 500 meters is considered a critical distance (Hörnsten 2000, Rydberg 2001). Hörnsten (2000) states that "the larger the distance to the forest, the larger the time span since the respondents last visit to a recreational forest, especially if the distance exceeds 2 km". The main reasons stated for not visiting the forest as much as one would like, were lack of time, long distance, and feeling of insecurity. Distance is likely to be most important to children and old people, being less movable (Grahn and Stigsdotter 2003, Tyrväinen et al. 2005).

Perception and look of the forest

The commonly preferred look of the forest are open mature stands with easy access, i.e. pillar halls. Lowest ranked are sites containing lying trees limiting the access, and most people consider virgin forests unsuitable for outdoor recreation (Lindhagen and Hörnsten 2000, Rydberg 2001). Danish studies have shown that information can alter peoples perception of a site though. The more information given about the reason for different actions, (e.g. fencing, natural/virgin forests and prohibitions) the higher the sites were ranked (Jensen 2000). Children usually prefer different things than adults when in the forest, and seem to enjoy places not defined by adults. Children (as well as adults) prefer an open, savannah-like setting, while young people prefer a more dense and wild forest (Rydberg and Falck 2000). Children also have a need for shrubs and building materials for huts etc. (Lenninger and Olsson 2006).

Safety

The feeling of insecurity in forests could be a reason not to visit it (Grahn and Stigsdotter 2003). Often, percieved safety decrease the denser the vegetation gets (mainly dense understorey). Also maintenance plays a role, the better maintained the forest is, the safer it is percieved (Bjerke et al. 2006). No crime statistics concerning forest particularly are made in Sweden, but a very little share of all reported attacks take place in the forest (Estrada, pers. comm. 2007).

Natural values and biodiversity

Definition of noble broadleaved forests

The definition of a noble broadleaved forest is a forest ≥1 ha, that contains > 70% broadleaves, and > 50% noble broadleaves (elm (*Ulmus glabra*), ash (*Fraxinus excelsior)*, hornbeam (*Carpinus betulus*), beech (*Fagus sylvatica*), oak (*Quercus robur*), cherry (*Prunus avium*), lime (*Tilia cordata*) and maple (*Acer platanoides*)), of which more than ten trees/ha should have a diameter at breast height of at least 30 cm (Anon. 1979). A large proportion (>1/3) of the noble broadleaved forests in Sweden are located in the nemoral zone, in which it constitutes 45% of all biotopes (see fig. 1 and 2.) (Anon. 2004). App. 90% (70 000 ha) of the beech stands occur in southernmost Sweden (Scania, Blekinge and Halland), most of which (50 000 ha) is found in Scania (Anon. 2005, Anon. 2006b).

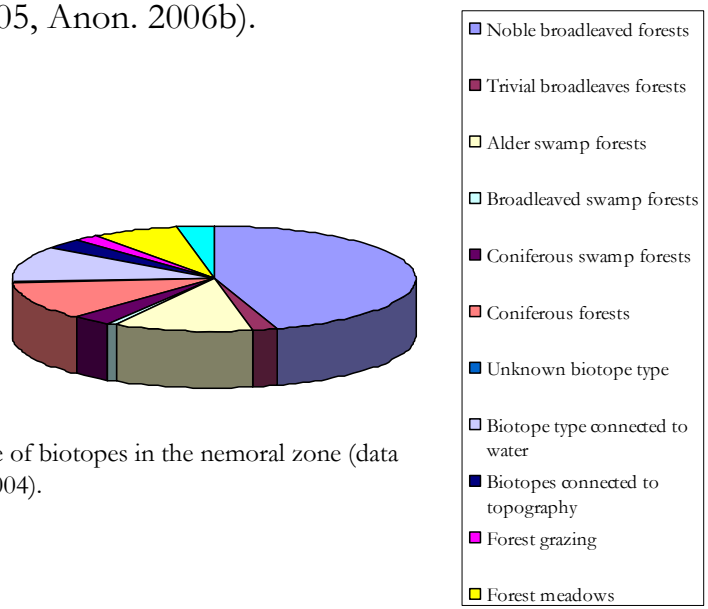


Figure 1. Share of biotopes in the nemoral zone (data from Anon. 2004).

Noble broadleaves and forest history

Elm, ash, lime, maple, and oak came to Sweden app. 8 000-10 000 years ago, after the latest glacial, while beech did not occur in Scania until app. 3 500 years ago (fig. 3) (Niklasson and Nilsson 2005). Although noble broadleaved forest only constitute about 1 % of the Swedish forests, more than half of the red-listed species in Sweden are connected to noble broadleaves.

One important reason is that many noble broadleaves can get very old and coarse, and thus many different habitats can occur in, or on, the same tree (Almgren et al. 2003).

In Sweden 590 species are connected to noble broadleaves, 290 of which can occur on trivial broadleaves as well, while 300 are obligate to noble broadleaves (Dahlberg and Stokland 2004). The high demands of noble broadleaves considering soil and climate often places them in areas inhabited by man since early times. It is thus not uncommon to find cultural remnants in or close to old noble broadleaved forests (Almgren et al. 1984). This is also true for Torup, where findings of stone age axes and hammers have been made (Anon. 2007b).

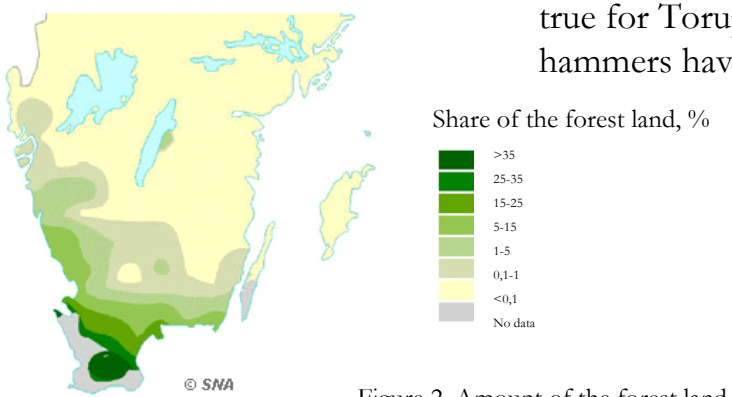
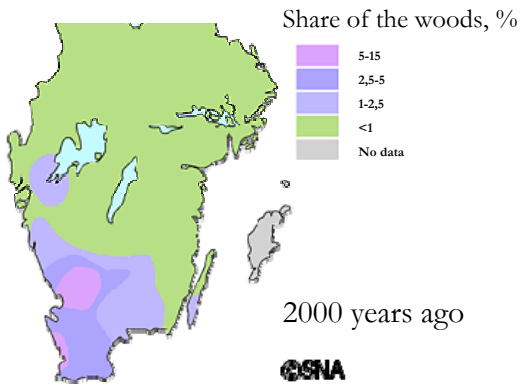
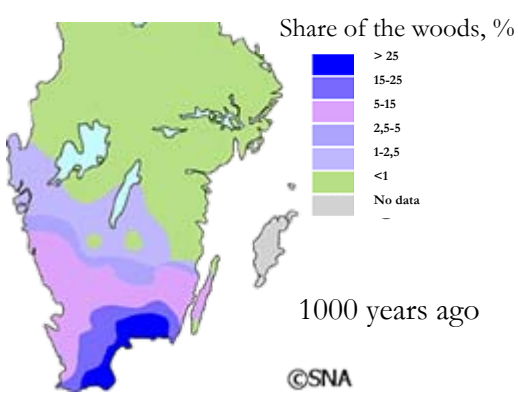


Figure 2. Amount of the forest land covered by noble broadleaves.





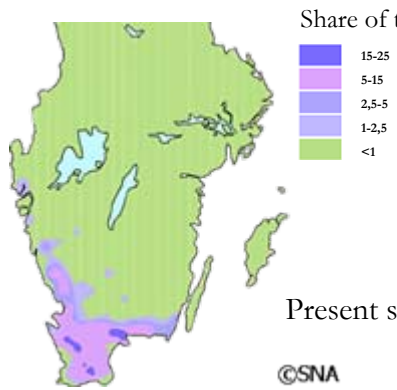


Figure 3. Amount of beech of different times.

The red-list and the importance of dead wood

The Swedish red-list include 3 652 species, 1 664 of which are considered threatened. Most red-listed species (51%) are found in the forest and approximately half of these are dependent on dead wood. During the last 50 years, areas of old (> 80 years) broadleaved forest has decreased with 80% (Samuelsson and Ingelög 1996, Dahlberg and Stokland 2004, Gärdenfors 2005). The environmental goal, "Levande skogar", states that production, as well as biodiversity, cultural heritage and social values should be protected. The amount of dead wood in average forests today is considerably lower than in "natural" forests, and virgin forests, and should increase (Samuelsson and Ingelög 1996, Dahlberg and Stokland 2004, Gärdenfors 2005).

Requirement of saproxylic organisms

Approximately 6 500 species are connected to dead wood in Sweden, for e.g. protection, feeding, or reproduction (fig. 4). Saproxylic (wood dependent) species are defined as species which during some part of their life cycle are dependent on either dead or dying wood on living, dying or dead trees (standing or lying), or on other wood dependent species (Samuelsson et al. 1994, de Jong et al. 2004). The most species rich saproxylic groups are insects and fungus, but also 45 species of birds, 12 species of bats, as well as pine marten (*Martes martes*), squirrel (*Sciurus sciurus*) and two species of salamanders (*Triturus vulgaris* and *Triturus cristatus*) use dead wood.

Usually the focus is on the *amount* of dead wood, but also the *quality* is important. The most obvious quality is the tree species, while others are the dimension of the wood, which part of the tree the wood is from, the successional stage, sun- exposure or shadow, moist, and the density of the wood, as well as special characters such as wood damaged by fire, hollow trees or wood in water. Taking all these qualities into consideration, there are more than one million possible combinations. For all figures regarding requirements of saproxylic species, there is also a large share that is not known (Samuelsson and Ingelög 1996, Dahlberg and Stokland 2004, de Jong et al. 2004).

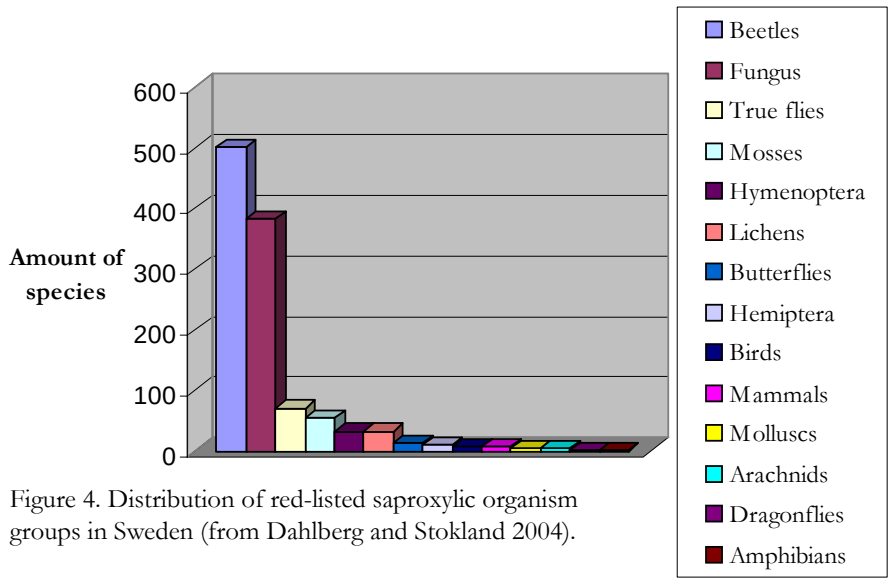


Figure 4. Distribution of red-listed saproxylic organism groups in Sweden (from Dahlberg and Stokland 2004).

Tree species

Half of all saproxylic species in Sweden are connected to deciduous trees (50 %). Among red-listed species, 65 % prefer deciduous trees. Most saproxylic species are found on spruce (app. 1200 species), followed by birch, oak, pine and aspen (app. 1000 species each). Oak has the most red-listed species connected to it (380), followed by spruce (350), and pine and beech with each app. 300 species (Dahlberg and Stokland 2004). The more decayed a log is, the less important the tree species is (Samuelsson and Ingelög 1996).

The majority of the red listed beetles and true flies (diptera) are connected to deciduous trees, mainly oak (221 species), and beech (170 species). For red- listed fungus, conifers are the prefered tree type. Mosses are in general not connected to one single tree species. They are mainly found on coniferous logs, but also occur on deciduous trees. Most lichens occur on conifers, or are generalists, but many species are also found in noble broadleaved forests. Vertebrates are mainly connected to deciduous trees, but no species are obligate to one single tree species (Dahlberg and Stokland 2004).

Shaded logs and sun-exposed snags

Approximately the same amount of red-listed species are connected to standing trees (snags) as to lying (logs). Among fungus, and mosses, being dependent on moist and shadow, most species prefer logs (of the almost hundred saproxylic mosses in Sweden, 28 is totally dependent on lying dead wood), while the majority of true flies, beetles, lichens and hymenopteras prefer sun-exposed snags. A majority of the red-listed species are dependent on more or less shady environments (e.g. many mosses, molluscs, true flies and fungus), while many saproxylic beetles, lichens, hymenopteras and hemipteras are dependent on warm, dry and sun-exposed sites (Dahlberg and Stokland 2004, de Jong et al. 2004).

Diameter

In all organism groups (except fungi) most species prefer coarse wood, half on all saproxylic species mainly occur on wood with a diameter larger than 20 cm (fig. 5) App. 80 % of the insects prefer a diameter >20 cm, while most fungus are not dependent on the dimension of the wood, only 16 % of the fungus prefer a diameter >20 cm. Among the beetles more than 60 % of the beetles prefer diameters of > 20 cm, and app. 20 % (30% of the red-listed beetles) > 40 cm. 90% of the mosses prefer diameters of > 20 cm, while most lichens tend to be generalists according to diameter preferences (Samuelsson et al. 1994, Dahlberg and Stokland 2004). The reason for prefering coarse wood could be that it has a more stable micro climate, as well as a better water/moist holding capacity. Coarser wood decays slowly, and are thus available as substrate for a long time. Many cavity nesting birds prefer trees as coarse and tall as possible, but the preference is also related to the size of the bird (Samuelsson et al. 1994).

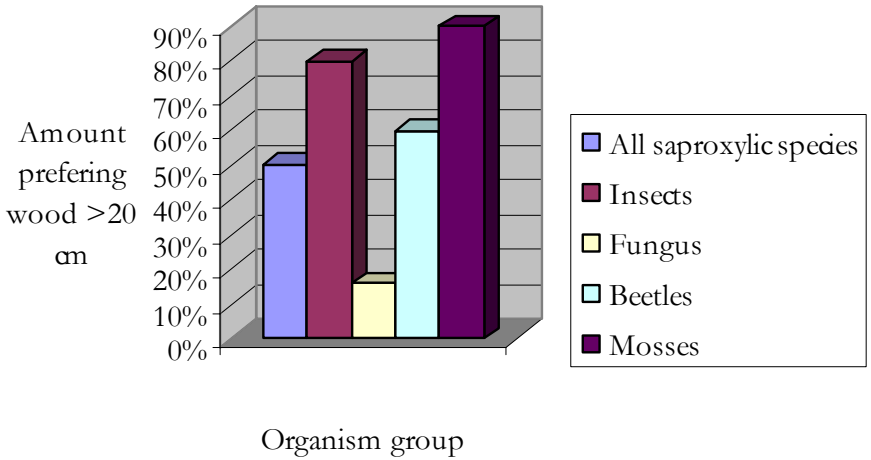


Figure 5. Amount of species in different organism groups prefering dead wood ≥ 20 cm (from Dahlberg and Stokland 2004).

Forest continuity

The smaller a population is, the bigger the risk that it goes extinct. If the population is limited by a certain biotope (e.g. dead deciduous wood), the population will decrease with a decreasing area of this specific habitat. How quickly it decreases is dependent on e.g. the demands of the species, how big the viable population is, its ability to disperse etc. A threshold for many saproxylic species has been set to app. 20 m^2 dead wood/ha (de Jong et al. 2004). One of the most important factors for many red-listed species connected to forests is thus the continuity, that the same kind of forest has been there for a long time for the species to be able to disperse (Almgren et al. 2003).

Successional stages and the importance of decayed wood

Many organisms are dependent on each other in successional stages, e.g. insects (chewing on the wood and dispersing fungal spores) are followed by fungus (digesting the wood), and wood peckers (utilizing the softness of the wood), which in turn make great homes for squirrels (Samuelsson and Ingelög 1996). Most species occur at medium decayed wood, with the exception of beetles, and mosses, where most species occur in late successional stages (very decayed wood). Beetles almost always occur during the first 50 years of decay, while app. 1/3 of the fungus use wood older than 50 years.

The decay is not always applicable to age, but is also affected by e.g. climate, location, tree species, sun-exposure, and moist (Dahlberg and Stokland 2004).

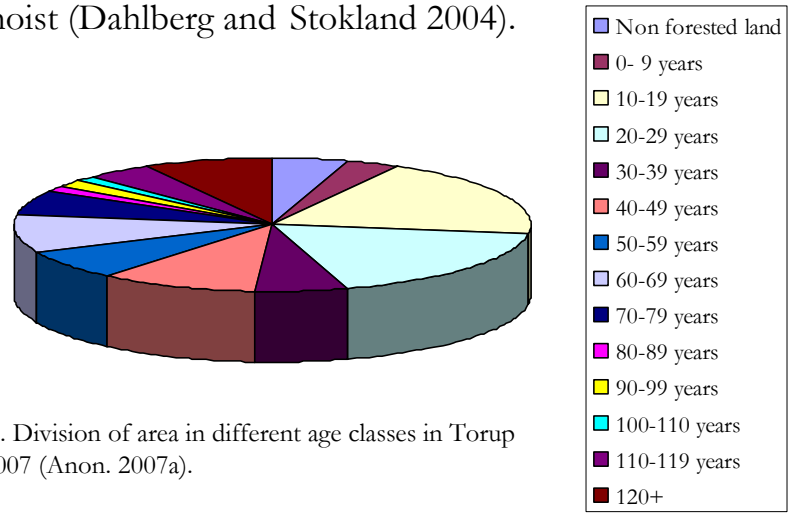


Figure 6. Division of area in different age classes in Torup forest 2007 (Anon. 2007a).

Trivial broadleaves

Although Torup is best known for it's beech forest, it also contains other important species. Most trivial broadleaves (e.g. birch, alder and aspen) are pioneer species, which meens that they are light dependent, and fast colonizers, but usually do not become very old. Because of their short life span, pioneer species provide dead wood in a forest at an early stage, and usually have an abundance of saproxylic species connected to them. One example is the alder swamps, which occur in several places in Torup (Andersson 2005).

Natura2000 and natural values in Torup

Natura2000 is a network of threatened areas that all members of the EU should contribute to by two directives, Habitats directive and Birds directive. The aim is to contribute to the biodiversity, and the goal to keep, or re-establish, a positive conservational status (Anon. 2003a). For Sweden, this means special responsibility or consideration to 90 nature types and 180 species/taxa. It is not stated in Natura2000 how the area should be managed, but only that the management must be beneficial for the specific nature type or species to be protected (Anon. 2003b). A common practice is still lacking, and outdoor life is not considered in the management of Natura2000-areas (Persson and Dahlberg, pers. comm. 2007).

Sweden joined the Natura2000 in 1995, and today the country has app. 4000 Natura2000-areas, covering an area of 6 million ha (60% of which are also national parks or nature reserves) (Lothigius 2006). In Torup, 123.9 ha has been a Natura2000-area since 2006. The protected forest type is beech forest with abundant herb layer (96.9%), and the main protected organism group is saproxylic beetles (Lang, pers. comm. 2007, Naturvårdsverket 2007, Persson and Dahlberg, pers. comm. 2007). The total area of this nature type is very small in Sweden, < 1000 ha (Anon. 2005).

Much of the biodiversity values in Torup are tied to dead wood (Brunet, pers. comm. 2007). The forest has the second most red-listed saproxylic species (70 insect, fungus, moss, and lichen species), as well as the second most saproxylic insects in Scania (Arup et al. 2001). To keep the present diverse insect fauna, the amount of big old beeches and oaks, as well as dead wood, high stumps and snags, must increase (Brunet, 2003).

Nature reserves and national parks

Torup has recently been suggested as a nature reserve (Persson and Dahlberg, pers. comm. 2007). Swedens first national parks were established in 1909, as the first in Europe. At present, Sweden has 28 national parks, and 2 718 nature reserves, most of which are in the northern parts of the country.

Together, the protected areas are 5 100 393 ha (11.33% of the country). The Environmental Code states that the purposes of nature reserves are "to keep biodiversity, treasure and keep valuable natural environments or meet the need for outdoor life areas. An area that is required to protect, re-establish or create valuable natural environments or habitats for threatened species can also be declared nature reserve" (Lothigius 2006).

Aim

Torup forest is a heavily used recreational forests in Scania. Due to its long continuity of beech forest, it also has one of the highest frequencies of red-listed saproxylic species, mainly insects, in Scania, and to conserve this the county administrative board of Scania wants to turn parts of Torup forest into a nature reserve. This may, or may not, create conflicts between natural values and recreation. This kind of conflict is likely to be common in urban forests, but very little research has been made, which made it an interesting and challeging task, as well as an important topic for a degree project in the Urban forestry and Urban greening program.

The aims of this thesis are

- to try to predict conflicts between recreation and natural values in Torup forest
- to outline possible solutions to predicted conflicts

4. Materials and methods

Torup, the area

Torup forest is located in Svedala municipality in Scania, and consist of 339.4 ha productive forest land (Anon. 2007a). The estate is from medieval times, and the castle was established in 1545 (fig. 7) (Trellid and Bontin 1999). The earliest sources concerning Torup forest is from the early 15th century (Leithner et al. 1997, Brunet 2003). Already at this point, the forest consisted mainly of beech, but also oak. Between 1660 and 1735 the estate was royal property, and historical maps from this time shows that large parts of the forest were cut during the Swedish-Danish wars (Brunet 2003).

Figure 7. Torup castle was established in 1545.

Torup has a long continuity of beech forest, app. 400 years (Lindhagen 1999, Brunet, pers. comm. 2007). The main cuttings occured in the late 15th century, and in the beginning of the 17th century, but also during these periods some areas contained a lot of old oak and beech. Furthermore, the area has been connected to other areas rich in saproxylic insects, which created opportunities for many wood living insects to survive in the area. Already in the first municipal management plan (from 1973) it is stated that recreation is the main aim and that cuttings should be done with care, e.g. no clear-cuttings. Biodiversity was not a big topic at that time, and in less than 30 years the amount of trees older than 100 years has decreased from 92 ha (1983) to estimated 32 ha (2010) (Brunet, 2003).

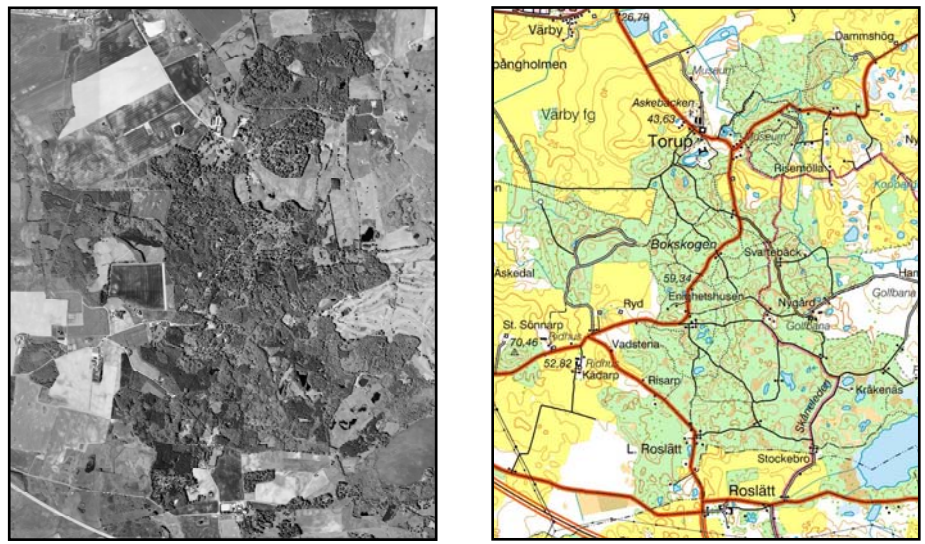


Figure 8a. and b. Torup forest

Malmö municipality bought the estate in 1970 to secure and develop the area for recreational purposes. The neighbouring estate, Skabersjö, is still owned by the family formerly owning Torup (Trellid and Bontin 1999, Lang, pers. comm. 2007). The areas wind thrown by the severe storms in the 1960's has been replanted with beech, and other noble broadleaves (Brunet, 2003, Brunet, pers. comm. 2007). Torup forest has been used for recreation since the early 1800's. In the beginning of the 20th century, the area had railroad, restaurant and tivoli, but the railroad was closed in 1948, and the restaurant burned in 1960 (Leithner et al. 1997). Today, the area has trails, tracks, cafés, changing-rooms, sauna, a small gym, and an adjacent golf course, and in total, the area has more than 1 000 visitors/day at the height of the season. (Trellid and Bontin 1999).

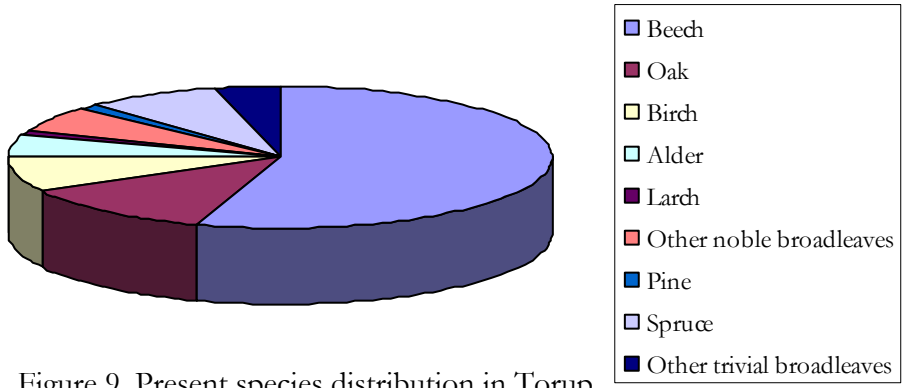


Figure 9. Present species distribution in Torup forest.

Present species distribution

From 1970 to 1998, the total forest area, as well as the amount of broadleaves, has increased (from 225 to 332 ha broadleaves and from 365 to 398 ha in total) (Trellid and Bontin 1999). The area mainly consist of beech (55%), but also oak, spruce, birch and alder (see fig. 9) (Anon. 2007a).

Management and silviculture

Forestry planning in Sweden is presently involving setting goals for each stand. The forest plan of Torup has five categories; PG (production with general consideration to nature, i.e. the production is dominant), K (combined goals, i.e. combination of nature and production, favouring one or the other), NS (nature conservation with management) and NO (nature conservation without management) (fig. 10) (Anon. 2007a). Production is still the dominant part, even though large considerations are taken to the recreational aspects (Lang, pers. comm. 2007).

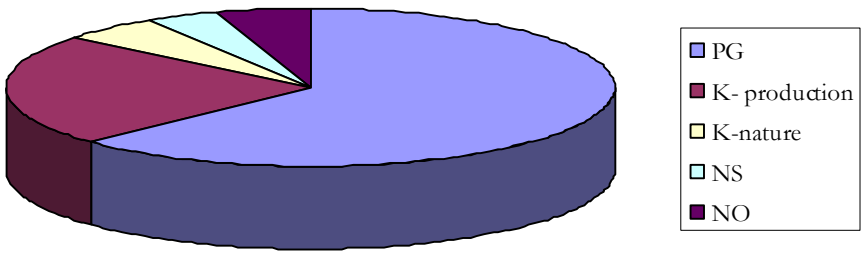


Figure 10. Division according to management in Torup forest.

Green areas in the region

The Malmö region, where Torup is situated, has the lowest proportion of publicly accessible land in the country (33 m^2, compared to the medium for Sweden's largest cities, 100 m^2), and all green areas are in one way or another man made (e.g. parks and agricultural areas) (fig. 11) (Olsson 2003).

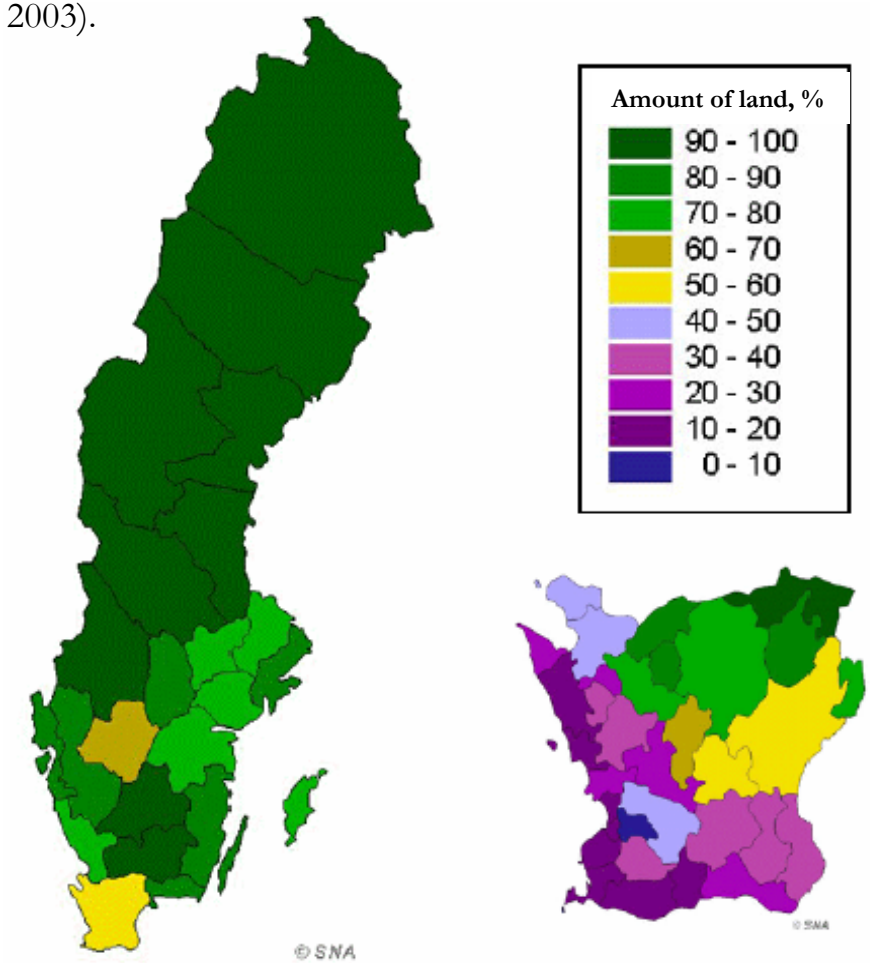


Figure 11. Amount of publicly accessible land in the country, and in Scania.

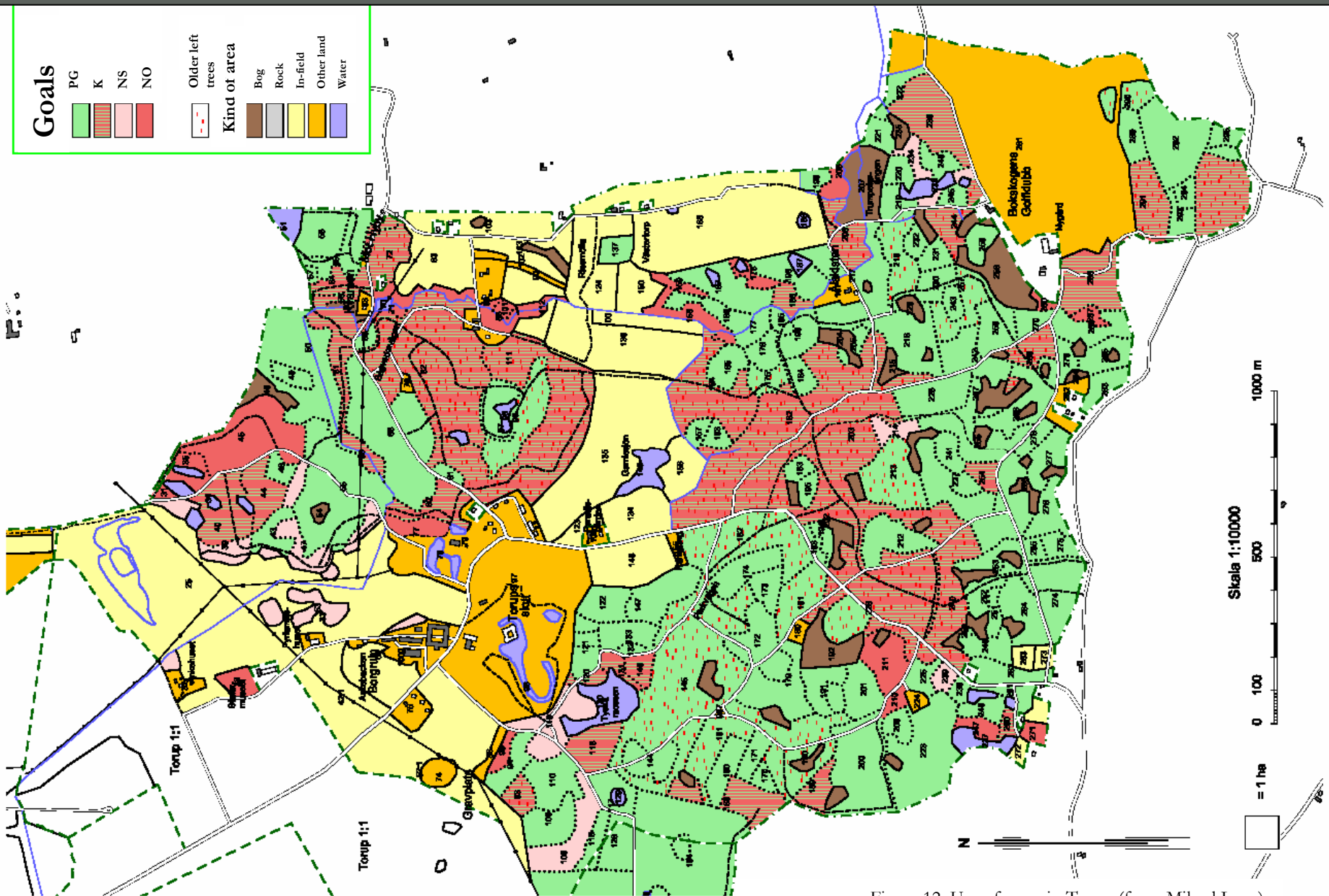


Figure 12. Use of areas in Torup (from Mikael Lang).

Collection of information

The base for this thesis is present literature and interviews with people involved in the area. Literature (books, reports and scientific articles) was used for information about the area, as well as for the theoretical background to the two main aspects; recreation and natural values. Also concerning Natura2000 and the present management, written sources were used. Most literature was found by using the search functions LUKAS and LIBRIS, as well as using references from present theses and articles. All translations from Swedish are mine. In case of names of organizations, I have tried to find the proper translation used by the organization itself, while in case of quotes and technical terms I have tried to come as close as possible in English. All photos are my own, except for 8a, while figure 2, 3 and 11 are taken from Sveriges Nationalatlas (SNA) web site (www.sna.se, with permission by Cramér, pers. comm. 2007), 8 a and b from www.eniro.se (with permission by Wallin, pers. comm. 2007), and figure 12 from Mikael Lang (pers. comm. 2007).

Interviews and surveys

To understand the present situation better, interviews were conducted with Mikael Lang (forest manager in Torup), Jörg Brunet (scientist with long experience of Torup, and a part of the county administrative board's reference group concerning the area), as well as with Helena Persson and Johan Dahlberg (representatives of the county administrative board). For a better understanding of the organized use of the area, an interview with Karin Bengtsson, teacher at the Nature school, was carried out, and to understand the children's perception, I followed a group of pupils from the school Sundsbroskolan (38 pupils from sixth grade) when visiting Torup and the Nature school. To compare the situation in Torup to similar cases, and try to find solutions, contact was taken with the Forest Agency, the Skogssällskapet, as well as with the managers of Stenshuvud and Söderåsen national parks, which has a partly similar situation.

To find out which organizations use the area, a questionnaire was sent by e-mail to 42 organizations of different kinds, registered in the municipalities Malmö or Svedala (appendix I and II). The organizations had app. three weeks to reply. Further, a small survey (appendix III) was made with random Torup visitors (24 persons age 26-76, 13 women and 11 men, 18 of which with university education) in field, and a biotope walk was carried out with 4 persons, to evaluate which look of the forest were preferred, and which were not. The survey was carried out with adults of different ages, in all parts of the forest (excluding café, parking lots, roads and the castle park), during late April.

5. Results

The users

Questionnaires (appendix II) show that Torup forest is mainly used by private persons, rather than organizations. The primary stakeholders are Malmö municipality (which owns the area) as well as the public (who it was bought for) but also the Nature school (which use the forest on a close to daily basis) and the county administrative board (which do not only wish do create a nature reserve in Torup, but already at present has a say since part of the area is a Natura2000- area). Secondary stakeholders are e.g. the few organizations using the area, SLU (doing research there), and possible tourists coming for the nature or the castle.

The county administrative board and Malmö municipality

The county administrative board wish to establish most of Torup forest as a nature reserve, but are still waiting for the decision from the Swedish Environmental Protection Agency. The main reason is to preserve the nature type (beech forest), but both natural values and recreation are considered. Further they see potential for other organism group than insects to establish. This is supported by surveys from similar areas (protected beech forests) in Halland, which has shown abundant amounts of red-listed saproxylic fungus) to establish. The forest would still be managed in most areas, and just very small areas can be considered for free development (Persson and Dahlberg, pers. comm. 2007). Considering the visitors' perception of the forest as a nature reserve, Persson and Dahlberg suggest different looks in different areas, e.g. a more "tidy" look close to the castle where visitors are more abundant, and more dead wood in other parts, but they also discuss the importance of information, to create an understanding for why the area look like it does (Persson and Dahlberg, pers. comm. 2007).

The manager of Torup, Mikael Lang, states that the area has been managed by man for hundreds of years, and he does not believe that it will benefit from less maintenance. He also believes that the public appreciates it the way it is today, and would not like it less managed. He also states that there is a pedagogical value in silviculture. Further, he wants hands-on- goals for managers/contractors, since he believes that it is hard to know what is really meant with abstract explanations (Lang, pers. comm. 2007).

Organizations

According to the questionnaire sent to organizations, only eleven organizations in Malmö and Svedala municipality use Torup, mainly scouts and outdoor organizations (see appendix IV). Except for these organizations, Torup is used by the Nature bus, and activities connected to it, as well as for other events, such as the multisport race "Skåne activity

race" in April. The main activities are scouting, outdoor life, and activities for children, but also organized exercising, culture and activities for retired people take place in the forest. App. half of the organizations use the area 1-2/week, and the rest 3-4 times/month or more rarely. The main reason for using Torup is the distance and accessibility, which is mentioned by all the responding organizations, while other reasons stated are that it contains "good" nature, no traffic, fits the purpose of the organization and is a nice change to the city. By the organizations, Torup is generally perceived as nice, and positively described. More than 80% (9 of 11 responding organizations) perceived the area as beautiful, > 50% as well managed and 45% as changing. 18% described it as boring and only one organization (9%) as poorly managed. Reasons stated for the response "boring" was that it was too adjusted to city people, and lacked a "forest feeling".

Half of the organizations did not miss anything in Torup. Features that the rest of the organizations missed were partly concerning the nature, and possibilities to use the area for outdoor life (tranquillity, less exploitation and people, natural springs, fire places and camp sites) and partly better facilities (waste baskets, better managed parking lots, better signs on the "hitta vilse"-track, as well as better signs to show the tree species present in the area, and lighted paths for running at night). The only conflicts between different user groups were when people use trails that they are not supposed to (mopeds, horse-back riders, and bikers on walking paths).

Visitors' perception and use of the area

Most visitors (70.8%) used the area more rarely than once/month, or did not reply, and only very few (~4%) more than once/week. The reasons for the visit were mainly walks, with or without dog, but also to enjoy the peace and calm, to take part in events connected to the Nature bus or to relax, and exsercise. Also the replies to why Torup was chosen for the visit are very alike. The main reasons stated are connected to the fact that it is the only forest close to Malmö, but also it's beautiful sceneries and that it is a good place for children to play. Finally, many respondents mention relaxation, freedom and that the area is large enough not to feel crowded. The most common statements on the perception of the area is beautiful (87.5%), followed by changing (~67%), natural (45.8%) and well managed (~58%). No respondents found the area boring or poorly managed.

The Nature school and the children's perception of Torup

The nature school is a municipal resource to inspire teachers to use the nature more, not just for teaching biology, but also for other topics. The nature school presently has five full time employees handling classes, as well as working with teachers, school yards etc. The main area is Torup, but also other nature areas in the vicinity of Malmö are used. Every year almost 100 school classes visit the Nature school, half of which in Torup, where also a house is loaned for free to classes (Bengtsson, pers. comm. 2007). According to Bengtsson, the nature school has a good relationship to other groups using the area, as well as to the manager.

The observations of the visiting children show that they are very focused on details, and on physical aspects; they climb trees, run, catch animals, break twigs and pick flowers. Being in the forest seem to energize the children, and animals and all loose objects seemed to be preferred to plants and a visual appreciation of nature. Further it was obvious that some children (e.g. scouts) felt much more at home and secure in the forest, while others were afraid of animals and felt very insecure.

The vast majority of of the children (~79.4%) were neutral, positive or very positive to dead wood, and even more (~94%) were neutral, positive or very positive to traces of management. Concerning the perception of the forest, the picture is much more scattered. Most of the children percieve Torup as beautiful (35.3%) and natural (35.3%), followed by well managed (29.4%) and boring (29.4%). The main reason for stating the forest as boring is not likely to be that the forest in itself looked boring, but rather that the children did not enjoy being in the forest at all, since the survey was carried out after a school field trip.

Figure 13. Children usually have a very active way of exploring the forest.

Potential conflicts

The users of the area, organizations and private visitors, agree that there are very few present conflicts in Torup. The ones mentioned are possible conflicts between horse-back riders/mopeds/mountain- bikers/joggers, and walkers, but no respondents states it as being a problem today. One respondent also mentions a further extension of the golf course to be a possible future conflict (appendix V).

The perception of dead wood

Probably the most obvious conflict between natural values and recreation is the one between the need for dead wood as habitat, and the perception of the forest as "untidy". Dead wood is crucial for many forest species, while the preferred look of the forest is open and without lying logs (Lindhagen and Hörnsten 2000, Rydberg 2001, Brunet, 2003, Norgren, pers. comm. 2007). In opposite to earlier studies, a majority of the respondents in my survey were neutral, positive or very positive to dead wood and lying dead trees (men slightly more than women, and respondent with university education slightly more than respondents without it). Reasons stated were that dead wood is natural in a forest, that it is good for the insects, and that it is exciting for children to climb on. The same was true for traces of management (e.g. cut off branches and stumps), where almost all respondents were neutral, positive or very positive. It was also clear that many of the respondent changed their view in a positive direction when explained why the dead wood was left.

Similar cases

A case partly similar to Torup could presently be seen in Älmhult, Småland. In this area, the municipality ecologist wish to keep dead wood from the storm Gudrun, in an urban recreational forest of app. 170 ha for pedagogical reasons, while the visitors explicitly prefer a more "tidy" looking forest. The conflict has not yet come to a solution (Norgren, pers. comm. 2007). Another case where recreation and natural values have been chosen between, was the big fire in Tyresta national park outside Stockholm in August 1999. Today, fire is a rare thing in many forests, but has formerly been very important in forest ecosystems (Niklasson and Nilsson 2005). In the Tyresta case, the safety aspect was the main question though, since the area is very densely populated, and the fire was put out during a massive rescue operation (Nylén, pers. comm. 2007).

In Scania, the two national parks Stenshuvud (on the east coast) and Söderåsen (in the northwest) are both very popular. Stenshuvud is app. the same size as Torup (< 400 ha) and hosts 400 000- 500 000 visitors/year. Being a national park, many of the activities that might get in

conflict with each other (e.g. mountain biking, horse-back riding, climbing, camping etc.) are prohibited, and the main conflicts concerning use are people making fires and keeping dogs off leash (which is also prohibited).

Concerning natural values and recreation, the main conflicts are the perception of dead wood, which is perceived as un-tidy, as well as management vs. free development (Ståhlberg, pers. comm. 2007). Söderåsen national park has app. 300 000 visitors every year, combined with high natural values. Here, the conditions are somewhat different, since one of the main reasons for the high natural values are that the area is partly very inaccessible, which has prevented logging in past times, and prevents too frequent visits today (Johansson, pers. comm. 2007).

Suggested solutions

Multifunctional forests

A multifunctional forest is a forest that fills several purposes at once. All forests could be said to be multifunctional by nature (producing timber, provide cycling of water and nutrients, biodiversity, CO^2- storage, climate regulation and soil protection, as well as calm and tranquillity for people walking in it), but multifunctionality is also about the use, that several activities could take place there at once, e.g. children's play and games, horse-back riding, walks, and scouting. Most forests of today as biased though, e.g. mainly production and very little biodiversity, or very natural but bad access (Larsen 2005). This is a common problem, a polarization which usually leads to either/or- solutions to complex problems, which do not favour acceptance of several groups (Clark 2004).

Division of natural values and recreation

The challenge is to combine multiple aspects, to create a forest functional both for natural processes and biodiversity, as well as for people's recreation. This could e.g. be to take different actions in different parts of the forest, i.e. to divide the forest into parts where natural values are the main focus and less attention is paid to the visitors' perception, and parts where the opposite is done. In Torup's case, a division could e.g. be made between a "visitor friendly" area surrounding the castle, and a more "natural" forest further from it. A similar solution is to keep strips of "tidy" forest close to the paths, while keeping dead wood etc. a few meters into the forest (Norgren, pers. comm. 2007, Persson and Dahlberg, pers. comm. 2007, Ståhlberg, pers. comm. 2007). Further, the main visitor pressure could actively be located to easy accessible areas, and close to the facilities, while some of the higher natural values could be left without easy access to prevent too heavy use. This has been done in Söderåsen national park, with good result (Johansson, pers. comm. 2007).

Information

Another important solution, or part-solution, is information. It has formerly been shown that information has altered respondents appreciation of natural areas (Jensen 2000) and several of the respondents in the present visitor survey indicated that they became more positive to e.g. dead wood when explained why it was there.

According to Ståhlberg (pers. comm. 2007), information is crucial to meet the needs of the visitors at Stenshuvud national park. The main information concerns the management, since Stenshuvud (as well as Torup) is created by human culture rather than by free development of nature (and thus need management to stay the same) which is not always known by the public. Further, he states the importance of making it easy for the visitor to keep in the proper place, i.e. to provide gates, trails, and openings, to avoid visitors destroying fences or walking trough sensitive habitats. This is also stressed by Johansson (pers. comm 2007) and Larsson (pers. comm. 2007).

The importance of information is also supported by the findings in the minor survey carried out in Torup during this thesis. Most of the visitors were not negative to dead wood, and became positive, or even more positive, when explained why it was there. This could be used by e.g. putting up signs telling why dead wood is left, as has been done in Söderåsen national park (Larsson, pers. comm. 2007).

Information is also likely to be important concerning the everyday management and its pedagocical value, mentioned by Torup's manager, Mikael Lang. By informing people about the management, and why this specific forest or forest type benefits from management rather than free development, it is likely that people become more positive and understanding to it.

6. Discussion

Accessible information and methods

Both recreation and species conservation are highly relevant topics of current interest, but there is still very little research available on the conflicts (or possible conflicts) between them. Conservation has been a hot topic for years, and much important knowledge is gathered on conservation in itself, as well as on combining forest management and natural values. Also on the preferred look, and people's perception of the forest research has been made, but very little on the matching of these findings to actual management or biodiversity research.

The choice of methods is always a delicate question in scienfitic work. In this thesis, a few small surveys were carried out in order to find the users, and to identify their needs and perception of the forest. The organization questionnaire was sent by e-mail, and had rather few respondents. This might be due to that the organizations do not use the area, or that they did not read their e-mails. Either way, the result is not in any way statistically certain, but should only be taken as a direction. The same goes for the visitor survey, which was very small, and many visitor groups were not reached. The survey was carried out on Saturdays, by asking people on the paths, which excludes weekday visitors, as well as e.g. runners and horseback-riders. It could be noted that these groups were very small though.

Aims and results

The aims for this thesis were to try to foresee and prevent possible conflicts, and to suggest solutions to them. To foresee conflicts in a specific environment is always hard, since the stakeholders, as well as their needs and wishes, are changing, but to a large extent possible conflicts are likely to be about dead wood and how tidy and park-like the forest should look. There will always be those who prefer a very open and park-like landscape, as well as those who prefer a forest left for free development. The solutions are more tricky. Since this kind of conflicts have not been a big topic in many places yet, and the research on the users' perception of the forest has recently begun, there are very few similar cases, and very few tried solutions.

Torup does not fit the prediction concerning how far users are willing to travel for a forest visit. The critical distance of 250-500 meters in weekdays, and 2 km for smaller trips and excursions is exceeded by far, by visitors from e.g. Malmö, Lund and Svedala. One probable reason is that Torup is very well known among people in the southern part of Scania, as well as the fact that it is one of the *only* forests in the area.

What to preserve in Torup?

Based on the data presented in the introduction, it is easy to see that it is not enough to wish to preserve saproxylic

species, since they have very different needs among them. Most saproxylic species, but far from all, are connected to medium decayed, deciduous wood of coarse diameters. Torup forest has been mainly deciduous for hundreds of years, and beech is the most abundant tree species, which provides an excellent habitat for e.g. many insects (as in Torup's case). But is it right to focus on the beetles only, or might it be better to aim for a broader diversity of species, as well as of organism groups?

Since the nature reserve decision is yet to be taken, it is still very un-clear what will be done to Torup, if and how the management will change, and it is thus impossible to say if the habitats will change. Having all the different features that Torup has (e.g. wetlands, and several different tree species of different ages) it has big potential for many different organism groups to disperse and colonize the area even more, which should be acknowledged.

Is natural values and recreation a possible combination, and who should manage it?

The possibility to combine different values is really a matter of interests. To keep both biodiversity and good recreation in the same area (as in Torup), a solution must be found. The alternative is to focus on natural values where visitors are less abundant, and thus less important to adjust to (which is not very realistic in Torup) or choose one intrerest or the other as more important.

In my perspective, also information plays a crucial role. Earlier surveys, as well as my own experiences from this thesis, show that most people become more positive to "natural looking" areas if told why they look like they do. Also a diversity of areas might be a key, to have both tidy and park-like landscapes, and areas containing dead wood, high stumps and a less managed shrub layer. Another important aspect is the knowledge of the manager. In the present Natura2000- plans, it is not stated how areas should be managed, and it is too new to have a common practice. This could create very concrete problems for the manager and/or the contractors. If a management plan for a protected area only states that it should be maintained to promote the endangered species, how much knowledge can we demand from the contractor? Do we need contractors educated in ecology and forestry for recreational purposes, or should the manager do all the maintainance himself?

Connected topics and future research

The question of conflicts between natural values and recreation is big and important in itself, but there are also many other questions related to it, and to each other. One is the question of accessibility, and use frequency of the forest. Today, a lot of people suffer from different kinds of stress diagnoses, and burnout diseases, which sometimes could be decreased, or even cured, by using the green environments. Also the physical health is worsening, with obesity and heart conditions. Here, the recreational forests

are crucial, as places for excersice, and for relaxation and tranquility. But to be used on a regular basis, they need to be close, look nice and, maybe most importantly, be accessible. This is true also for Torup, where one of the main reasons for using it is the vicinity to the home (mostly Malmö), but where many respondents also stated that better bus connections on week days would be beneficial. Also for environmental reasons it would be preferable not to need to take the car to get to the forest.

The same goes for schools, it is likely that more abundant visits to the forest would be beneficial, creating possibilities for the children to be active, excercise in a fun way, and to discover nature.

People's (children's, as well as adults') use of the forest is also very closely linked to the future of the natural values. People who have not grown up with forest, who feel alienated from it and do not have any habit of using it, are probably not likely to be very interested in preserving it.

7. Conclusions

Torup forest is an area of great interest, being both one of the most visited recreational forests in Scania, and habitat to the second most abundant populations of red-listed saproxylic species in Scania. The main users are private persons, as well as a few organizations, and the main use are walks, outdoor life, scouting and excersising. The area is very appreciated, and percieved as beautiful and well managed.

At present, there are very few conflicts between different user groups, and the main future conflict is likely to be the visitors' perception of dead wood as untidy, while crucial to the saproxylic organisms in the planned nature reserve. There are very few silimar cases in the country today, and thus very few tested solutions.

Acknowledgements

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Appendix I

Hej!

Mitt namn är Tove Hultberg, och jag skriver just nu mitt examensarbete på utbildningen ”Master of Urban Forestry and Urban Greening”, på SLU i Alnarp. Uppsatsen handlar om användningen av bokskogen i Torup, och möjliga konflikter mellan naturvärden i skogen och användningen för rekreation och föreningsverksamhet.

För att få en så bra bild som möjligt av hur området används vill jag väldigt gärna komma i kontakt med er som använder skogen, och jag vore därför oerhört tacksam om ni ville ta er tid att fylla i bifogad enkät. Skriv ut den och fyll i (det går naturligtvis utmärkt att skriva på baksidan eller på ett annat papper om det är för lite plats!), ring mig eller skriv svaren i ett mail, det går precis lika bra vilket som!

Om ni har några som helst frågor om enkäten, mitt projekt eller något annat är ni varmt välkomna att höra av er till mig!

Mvh
Tove Hultberg

Ps. Jag behöver era svar senast den 20 april!

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1. Föreningens namn

2. Vilken typ av verksamhet bedriver föreningen? (Flera alternativ får väljas).

- ☐ Friluftsliv/scouting
- ☐ Barnverksamhet
- ☐ Sport/motion
- ☐ Kultur
- ☐ Annat

Kommentar:

3. Ungefär hur ofta använder ni Torup för er verksamhet?

- ☐ Tre gånger i veckan eller mer
- ☐ En till två gånger i veckan
- ☐ 3-4- gånger i månaden
- ☐ 1 gång i månaden
- ☐ Mer sällan

Kommentar:

4. Till vad använder ni Torup?

5. Varför passar detta område er verksamhet? Varför är ni just här?

6. Hur uppfattar ni området? (Flera alternativ får väljas).

- ☐ Vackert
- ☐ Omväxlande
- ☐ Tråkigt
- ☐ Spännande
- ☐ Naturligt
- ☐ Välskött
- ☐ Vanskött

Kommentar:

7. Saknar ni något i området?

8. Hur kan Torup göras bättre för era behov?

9. Finns det idag, som ni ser det, några konflikter mellan olika användare av området?

Organization	Questionnaire sent to	Reply
MALMÖ MUNICIPALITY		
Scouts and outdoor organisations		
Malmökretsen av Svenska scoutförbundet	scoutkansli@telia.com	No reply
Friluftsfrämjandet i Malmö	info@malmo.frilufts.se	Do use
Friluftsfrämjandet i Husie	info@husie.frilufts.se	No reply
Tornfalkens scoutkår	tornfalken@passagen.se	No reply
Svenska Missionsförbundets Ungdom i Malmö	malmomissionsforsamling@telia.se	Mail bounced/incorrect adress
Slottsstadens scoutkår	slottis@scouting.nu	Do use the area
Scoutkåren Gripen	gripen@telia.com	No reply
Scoutkåren Alsadek	ali_mh_hussein@hotmail.com	No reply
Oxie scoutkår	info@oxiescout.se	No reply
Möllevångens scoutkår	ama-ake@telia.com	Do use the area
Malmö KFUM-KFUK	konsulent@malmo.kfum-kfuk.se	Mail bounced/incorrect adress
Klöverkransens scoutkår	kloverbo@krestin.net	Mail bounced/incorrect adress
Kirsebergs scoutkår	anders.isaksson@home.se	No reply
KFUM-KFUK Skåne-Blekingeregion	skane-blekinge@kfuk-kfum.se	Do not useTorup since we have an own camp ground outside of Höör.
Husie scoutkår	heja@husiescout.se	No reply
Fosie scoutkår	exip_77@hotmail.com	Mail bounced/incorrect adress
Djupadals scoutkår	info@djupadal.nu	No reply
Augustenborgs scoutkår	putte_g@hotmail.com	No reply
Friluftsfrämjandet i Skåne	Frilufts.skane@telia.com	No reply
Naturskyddsföreningen i Skåne	kansli@skane.snf.se	Do not use the area
Sport clubs, riders etc (incl. handicap sports)		
Skabersjö skytteförening	skabersjo.skf@telia.com	Do not use the area
Malmö ridklubb	kansliet@malmoridklubb.com	Do not use the area

Föreningen Ponnygården Arken	arken@ponnygarden.se	No reply
Malmö civila ryttareförening	mcr@malmocivilaryttare.nu	Do not use the area
Idrottsklubben Scania	kansli@ikscania.se	No reply
Föreningen Malmöskyttarna	malmoskyttarna@telia.com	Do not use the area
Malmö orienteringsklubb	info@mok.nu	No reply
Malmö frisksportklubb	leif.persson@frisksport.se	Do use the area
Heleneholms IF	kansli@heleneholmsif.se	Do use the area
Handicap organisations		
Afasiföreningen i Malmö-Lund	kansliet@malmo.afasi.se	No reply
De handikappades Riksförbund (DHR)	dhrmalmo@telia.com	Do not use the area
Föreningen idrott för handikappade	info@fifh.com	Do not use the area
Handikappföreningarnas samorganisation i Malmö	hso.kansli@telia.com	No reply
Synskadades förening i Malmö	exp@srfmalmo.nu	Do not use the area
Organisations for elderly and retired		
PRO Skåne	pro-skane@skane.pro.se	Do not use the area
PRO Samorganisation	info@promalmo.se	Do use the area
International organisations and others		
Albanska kulturföreningen Tirana	akf_tirana-malmo@hotmail.com	Mail bounced/incorrect adress
Herrgårds kvinnoförening	jila040@yahoo.se	No reply
Klagshamns byalag	sez522t@tninet.se	Do not use the area
Kroatiska kulturföreningen Napredak	hkdnapredak@hotmail.com	Mail bounced/incorrect adress
Malmö Allmänna Idrottsklubb	kansliet@mai.se	No reply
SVEDALA MUNICIPALITY		
Scouts and outdoor organisations		
Bara Scoutkår	ordforande@barascoutkar.se	Do use the area
Svedala scoutkår	tobias@holmbergs.com	Do use the area

Friluftsfrämjandet Barabygden	lena.andt@telia.com	Mail bounced/incorrect adress
Friluftsfrämjanet Svedala	thomas.lofquist@svedala.frilufts.se	Do use the area
Svedala naturvårdsförening	romberg@mbox302.swipnet.se	Do use the area
Sport clubs, riders etc (incl. handicap sports)		
Svedala Brukshundsklubb	info@svedalabrukshundklubb.com	Do not use the area
International organisations and others		
Civilförsvarsförbundet Malmöhus	info@civil.se	Do use the area

Appendix III

Ålder_____

Yrke_____

Kön_____

Utbildning_____

1. Din inställning till liggande död ved/döda träd

- ☐ Mycket positiv
- ☐ Positiv
- ☐ Neutral
- ☐ Negativ
- ☐ Mycket negativ

2. Din inställning till spår av skötsel (ex. liggande grenar, stubbar etc.)

- ☐ Mycket positiv
- ☐ Positiv
- ☐ Neutral
- ☐ Negativ
- ☐ Mycket negativ

3. Ungefär hur ofta använder du Torup?

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- ☐ En till två gånger i veckan
- ☐ 3-4- gånger i månaden
- ☐ 1 gång i månaden
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Kommentar:

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Kommentar:

7. Saknar ni något i området?

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Appendix IV

1.	2.	3.	4.	5.	6.	7.	8.	9.
Svedala Scoutkår	scouting	3-4 times/ month, including the area around Yddinge.	scouting, orienteering	Good nature and vicinity to Svedala	Beautiful, natural, well managed	Natural springs, (like the ones in Skäralid)	Less exploitation (there are too much people in the area)	no

Friluftsfrämjandet Malmö lokalavdelning	Outdoor life/activities for children	3-4 times/ month	We have children's groups such as Knytte, Mulle and strövare in the forest. The older children use the area for e.g. orienteering.	Proper distance from Malmö, good forest, alrge area for many groups to have activities in.	Beautiful, exciting, changing.	More fire places.	More ready camp places.	No
Möllevångens scoutkår	Outdoor life/ scouting	More rarely	Walk the "vilse" trail, barbecue at the fire places.	This is our closest "vilse" trail.	Beautiful, boring, poorly managed.	More waste baskets, more shelters for over night camping.	Not so much, we don't use Torup that much, we are more often in our house in Häckeberga.	No idea, we are not there that much.

Civilförsvars-förbundet Malmöhus	Activities for children, ”hitta vilse” trail.		The ”vilse” concept and trail.	Good area	Beautiful, changing, well managed.	No!	-	-
Svedala naturvårdsförening	Outdoor life/scouting	More rarely	Bird watching, quiz walks	The short distance, and the easy access are good resources.	Beautiful, changing, exciting, natural	Checking and surveillance of parking the lots.	A trail with signs telling about the trees.	Horse-back riders, moutainbikers, mopeds can cause conflicts with other osers.
Bara scoutkår	scouting	1-2 times/week	scouting	It is close and the forest suites well for the activities.	Beautiful, well managed	No	-	-
Malmö Frisksportklubb	Running	1-2 times/week	Running practice and competition once a year, with 200-300 participants	-	-	-	-	-
PRO Samorganisation, Malmö	Activities for retired people	Varied	Walks	The close distance	Beautiful, changing	-	-	-

Slottsstadens scoutkår	Scouting/out-door life and activities for children.	More rarely	Excursions and the ”hitta vilse” trail.	No traffic, the closest ”forest” for city scouts.	Beautiful, changing, well managed.	Better signs on the ”hitta vilse” trail.	-	No

Friluftsfrämjandet Svedala lokalavdelning	Outdoor life/canoeing/ culture/activities for children	Excersice once/week, 5-8 times/year for activities for children, “Day of the forest” etc.		Accessible to the public, but we also use other areas.	Boring (it is a recreational area for Malmö citizens. Nature and other things has been adjusted to it. It is a beautiful area, but it is hard to get a proper “forest feeling”), well managed.	The tranquility, camp sites/fire places along the southern trails.		Prohibited biking on the forest trails is a danger.
Heleneholms IF	Sport/ excersice, we mainly run in the forest, possibly a walk or two from time to time.	1-2 times/week, but mainly during summer, since it is too dark in the winter, and with the snow it is sometimes too bad to run on.	We mainly use Torup to run.	Torup is close to Malmö, and it only takes 10 minutes to drive there, it is a good change to the city environment and the asphalt in Malmö.	The area is beautiful and well managed.	We don’t miss anything in Torup.	More light on the tracks to make it possible to run the linger trails even when it is dark.	No, we don’t know about any conflicts.

Appendix V

Age	Occupation	Gender (F/M)	University education (Y/N)	Lying dead wood/dead trees	Traces of management (e.g. lying branches, stumps etc).	App. how often do you use the area?	For what do you use it?	Why does this area suit you? Why do you use this specific area?	How do you percieve the area?	Do you miss anything in the area?	How could Torup be better adjusted to your needs?	Are there any conflicts, as you can see, today?
57	Owns private company	F	N	Negative	Positive, good that it is being maintained, but should be cleaned away.	More rarely	Walks	Invited	Beautiful, changing and natural	No, good with signs	More info on tree species, age etc.	
56	Owns private company	M	Y	Negative	Positive	More rarely	Walks	Invited	Beautiful, changing	No	-	No, and there shouldn´t be, due to it's size.
38	Salesman	M	Y	Very positive	Very positive		Outdoor life with the family	Close to Malmö, wish to barbecue and take a walk with the family.	Beautiful, natural, well managed.	No	-	-

38	Reception-ist	F	N	Negative	Positive		Outdoor life with the family	Close to home	Beautiful, changing, well managed	No	Maybe more parking lots	No, the nature is for everyone
50	Doctor	M	Y	Neutral	Neutral	More rarely	Walks	Beautiful	Beautiful	Toilet	Let it be as it is	Jogging persons bounce against walkers
44	Musician	F	Y	Neutral	Neutral	More rarely	Walks	To walk in the forest	Beautiful	-	-	-
76	Retired (finance)	M	Y	Positive	Positive	-	Walks with the family	Beech forest is nice, good paths. It is better than parks, which is the alter-native.	Changing, natural and well managed	Toilets when café is closed	Toilets	-

52	Nurse	F	Y	Positive	Very positive		Walks	Spring flowers. Do not have a car, but there are good bus connections here.	Changing	-	Even better bus connections	-
63	Doctor	M	Y	Neutral	Positive		Walks	It is usually ok	Beautiful, changing and well managed	-	More buses	-
76	Retired (child care)	F	N	Positive (talks about insects)	Positive	-	Events connected to the Nature bus	Nice to get away from the city, the Nature bus is good	Beautiful, changing, exciting, natural and well managed	Benches along the paths and maybe toilets	Bus in week days	-
27	Student	F	Y	-	-	-	Nature, walks	Nice	Beautiful, changing, exciting and well managed	More parking lots	-	-

32	Handicap assistent	M	Y	Positive	Neutral	-	Relaxation	Close to Malmö, the child can run around	Beautiful, natural and well managed	No	-	No
35	Social worker	M	Y	Very positive	Very positive	-	Walks	Wonderful, forest, free, close to Malmö	Beautiful, changing, well managed	No	-	Maybe the extention of the golf courses.
61	Library assistent	F	Y	Very positive	Positive	Once /month	Outdoor life, culture and excercise	Closeness, freedom	Beautiful, well managed	-	-	-
26	Train guard	F	N	Negative	Positive		Walk the dog and enjoy nature	Close to Malmö, changing and many different paths	Beautiful, changing, natural and well managed	No	Toilets by the parking lots	No experienced ones
28	Accountant	M	Y	Positive	Very positive	Once /month	Excercise with the dog	Close to Malmö	Changing, natural and well managed	No	Maps and more marked paths	No

48	Office staff	F	N	Neutral	Negative		Walks and excur-sions	Large areas, relaxa-tion	Beautiful, natural	No	Let it be	No
52	Team leader	M	N	Positive	Neutral	3-4 times /mon th	Walks	Beautiful and ok distance	Beautiful	Bench es	-	-
30	Recruiting consultant	F	Y	Neutral	Neutral	More rarely	Walks	Nice nature	Beautiful	No	-	-
30	Accountant	F	Y	Neutral	Positive		Walks, coffee in the slottsstu gan	Nice nature, green, castle environ-ment	Beautiful, changing, natural and well managed	No	Open castle	no
70	Retired (journalist)	F	Y	Positive	Positive	3-4 times /mon th	Walks	Beautiful and peaceful	Beautiful, changing, natural and well managed	Bench es	-	Possibly people not liking dogs
40	Nurse	F	Y	Positive (good for authistic son to climb on)	Positive	1-2 times /wee k	Walks	Good distance from home (Malmö)	Beautiful, changing, natural	No	-	-

47	Technical consultant	M	Y	Positive	Neutral	More rarely	Walks and re-creation	Close, nice, good café, good parking	Beatiful, changing, well managed	Some-times the calm and tracquility	-	No more golf coarses!
34	Environ-mental consultant	F	Y	Positive	Neutral	More rarely	Walks, picnic	Close to Lund, beatiful area for walks, café.	Beautiful, changing, well managed.	No	Works fine as it is.	Conflicts between rekreations and natural values (e.g. walks, picnic).
13	student	F	N	Neutral	Neutral	More rarely	“Fika”	Don’t know	Beautiful, boring, natural (I think it could be nice in the forest, but it is boring).	Yes	I don’t know, prefer the city to the forest	Don’t know
13	Student	M	N	Very positive	Very positive	Never	-	-	Changing	-	-	-
12	Student	M	N	Very positive	Very positive	Never	-	-	Natural	-	-	-
12	Student	F	N	Negative	Neutral	More rarely	Learn about nature	To learn	Exciting	No	-	-

12	Student	F	N	Neutral	Positive	1-2/week	Walks	Nice nature	Beautiful	Internet café	More fun stuff	No
13	Student	M	N	Positive	Positive	More rarely	-	-	Natural	-	-	-
12	Student	F	N	Neutral	Neutral	App. 2 times /year	Walk in the nature	We had to come with the school	Boring, well managed	Internet café	More fun stuff	-
12	Student	F	N	Neutral	Very positive	More rarelt, I only come here with school	Walk and learn things	Since the school force us	Well managed	More toilets	-	-
12	Student	F	N	Negative	Neutral	More rarely, mainly with school, but sometimes with my family	Different! Learn about nature, look at it etc.	Perfect for everybody! We learn about the forest/nature.	Exciting	No..	I really don't now. Really nice place!	No!

12	Student	F	N	Neutral	Positive	More rarely	The look of the nature	For fresh air, beautiful flowers etc.	Beautiful, exciting, well managed	The beautiful pond	Calming	-
13	Student	M	N	Neutral	Neutral	Once /month	Go there with the school	There is just one forest in Scania	Beautiful, well managed	-	-	-
14	Student	F	N	Negative	Positive	More rarely	To look att plants	Because it is green, and I like when it is green.	Beautiful, changing, exciting, natural, well managed	-	I already think it is nice!	-
13	Student	F	N	Positive	Positive	More rarely	Walk in the forest	Since the school chooses	Beautiful, boring, natural	-	-	-
13	Student	M	N	Very positive	Very positive	More rarely	School trip	Learn more about animals and plants	Well managed	Burger King	Nicer roads	-
13	Student	M	N	Very positive	Very positive	More rarely	School trip	To learn more about animals and plants	Natural	A footbal l field	Nicer roads	Yes, a lot

13	Student	F	N	Neutral	Neutral	More rarely	Out in the nature	In don't like the nature that much	Boring, natural	Yes, stores	Make benches, and small food stores	No
13	Student	M	N	Neutral	Positive	Once /month	Be bored	It does not fit me	Natural	Hot-dog stand	Nothing	No
13	Student	M	N	Neutral	Neutral	More rarely	Be in the forest	It is nice there	Changing	Giant steeple chase with nets etc.	More exciting	-
12	Student	F	N	Negative	Neutral	More rarely	To jog	I jog a lot there, very good jogging trails	Beautiful, exciting, natural, well managed	Yes, horses and more animals	Nothing, it should be a s it is	No
13	Student	M	N	Positive/neutral	Positive/neutral	More rarely	Nothing	Could not decide	Beautiful	Hot-dog stand	-	-
13	Student	M	N	Very negative	Very negative	More rarely	Run	To run, because it is fun to run in the forest	Boring	-	Clean toilet	-
13	Student	M	N	Negative	Neutral	More rarely	Be in the forest	To learn about nature	Beautiful	-	-	-

13	Student	F	N	Neutral	Neutral	More rarely	Looked at bugs and was out in the forest	Since we were on a school trip. We were supposed to look at bugs	Changing, boring, natural	More benches	To put more benches and other fun things	No!
12	Student	F	N	Neutral	Very positive	More rarely	Walk and look	Since the school was there	Exciting. It is exciting to look at real plants and animals	Benches	-	-
12	Student	M	N	Neutral	Positive	More rarely	To take walks	Since it is fun to look around	Changing	Some animals	Less trown trash in te nature	No!
12	Student	F	N	Neutral	Very positive	Twice/year	Walked	Since the school was there	Beautiful, changing, natural, well managed	Benches	-	I don’t get the question!

11	Student	F	N	Neutral	Neutral	More rarely, I don't come here if I don't have to	Excursions	Since I had to come with school. I don´t usually like the forest	Boring, natural. The forest is just trees, boring!	Yes, Burlöv Center (shopping center)	Build a shopping center	Yes, if the trees don't get along.
12	Student	M	N	Very positive	Very positive	More rarely	When we come with school	Don't know why school wants us to	Boring	No, nothinh, elephants, safari	Clean toilets	
13	Student	F	N	Negative	Neutral	More rarely	Usually orienteering	Don't know, since it is good for orienteering	Boring, natural	No, ice-cream store, store	Store	-
13	Student	F	N	Neutral	Neutral	More rarely, there are snakes	To move around	I am hardly ever here!	Boring because it is poorly managed because you don't kill the snakes	Snake killers	Kill the snakes	Between people and snakes, kill the snakes

12	Student	M	N	Very positive	Very negative	More rarely	Walks	It is beautiful, we went with school	Beautiful	-	-	-
14	Student	M	N	Positive	Positive	More rarely	-	To check out trees and insects	Natural	-	-	-
12	Student	M	N	Positive	Positive	More rarely	Learn stuff	Ask the school manager, we could not be part of the decision	Beautiful, well managed	Virgin forest	You can open a store selling “slip protectio ns” for shoes	Between the Al-quaida and the Cia (NSA, FBI, NCIS).
12	Student	M	N	Negative	Positive	Once /mon th	Orientee ring, look at trees and plants	Since there are much animals and plants. And since the chool forced us	Changing	Canoes and lianas to swing to the other side	Submari nes and jet packs, roller coaster under water	-

Age	Occupation	Gender (F/M)	University education (Y/N)	Biotope walk
57	Owns private company	F	**N**	Prefer the open areas and wet lands, talks a lot about that the dead wood looks untidy and boring. Nicer to be able to see into the woods. Young forest is not liked. Enjoys animal life, paths and old trees, as well as the fact that the land is undulating. Positive to info on the species, and to have dead wood in the forest and cleaner edges. Thinks that people are more likely to understand and be ok with dead wood if info, should be proud of the area. Says it could be hard for the children to play in the area if branches etc are left.
56	Owns private company	M	Y	Do not like dead wood or young forest, but enjoys the older open stands and the signs. Enjoys that there are wet lands and streams, and are curious about birds, animals and tree species. Do not enjoy the untidy look, but don´t think there should be any conflicts, positive to having dead wood further into the forest.
47	Technical consultant	M	Y	The ugliest area is the final one, with lying shrubs. Positive to the changing area and the water bodies (due to animal life). Like the many different areas, but would not have noticed them himself. Beautiful with lying logs with mosses and very arcitechtural with dead standing trees.
34	Environmetal consultant	F	Y	The ugliest area is the final one, with lying shrubs. Nice with changing landscape. Pretty forest, not ver fond of the regeneration, but maybe it will be better when green. Like the water bodies. Hard to move in the shrubby areas, the see through ones are best.