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Landscape History of the Deciduous Forest Suserup Skov, Denmark, Before 1925

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Based upon a wide range of historical sources, the article attempts to give a rough impression of the Suserup landscape, its structure and development and woodland management from the Middle Ages until c. 1925.

Until 1807 Suserup Skov was part of a large woodland area covering the fields and meadows of Suserup and its neighbouring villages. Hence, during Medieval and Early Modern times, it was profoundly influenced by traditional, rural woodland management (pannage, pasture, coppicing etc.). By its enclosure in 1807, Suserup Skov was segregated from the surrounding countryside as a forest reserve to serve primarily as a wood producer. Already since the 1850s, however, it was managed as a minimal intervention forest even though some wood production continued. In 1925 it was conserved for biological and recreation reasons. Hence, following a long history of intensive human interference, during the last 150 Suserup Skov has only been minimally influenced by Man.

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Introduction

Suserup Skov today forms a fairly isolated woodlot which since the early 19th Century, as the great majority of Danish forests, has been fenced in order to protect it from grazing domestic animals. Located at 55° 23' North, 11° 34' East, it is situated at an elevation of 5-30 meters on the precipitous northern bank of Tystrup Lake in the southern part of Suserup Village.

Until the late 18th Century Land Reforms, however, the present forest made out only a minor part of an extensive area of intermingling wood pastures, meadows and arable fields, all of which were dominated by trees. In this pre enclosure landscape, woods served as complex natural resources, providing rural society with fuel, building materials, animal fodder and supplementary land for prospective cultivation.

In 1792 the old open field system of Suserup was abandoned and the land enclosed and redistributed among village farms and cottages. Woodland persisting in the farm lots was generally cleared and the ground converted to arable fields or treeless meadows, whereas three parts of the village were selected as future forest reserves. One of them was Suserup Skov.

As a part of the Forest Districts of Sorø Academy, these forest reserves were

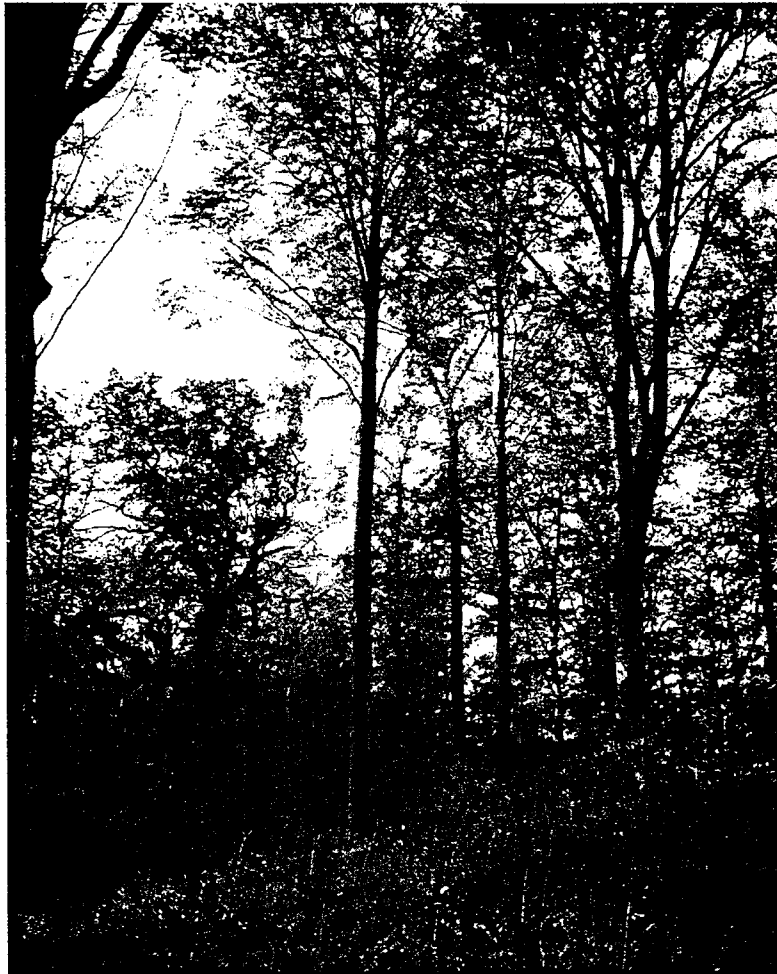


Fig. 1. Old oak and beech trees among vital regrowth in Suserup Skov. Photo 1922. Danish Forest and Landscape Research Institute.

submitted to modern silviculture, and until the middle of the 19th century their main purpose was to produce wood. From the 1860s, however, the wood production of Suserup Skov receded into the background, as it was administratively claimed as a minimal intervention forest. Hence, the intensity of felling decreased and very little artificial rejuvenation took place. In 1925 Suserup Skov was submitted to a nature conservancy clause and so, modern regards for nature conservation and recreation formed the basis of the present seminatural forest (Fig. 1).

Based upon the interpretation of written historical records and maps, an attempt will be made to outline the long term preconditions of the present state of Suserup Skov (Emborg, Christensen and Heilmann-Clausen 1996). Such an analysis is feasible in relative detail only since c. 1800, whereas a more large scaled retrospective landscape analysis must be applied to the pre Land Reform period.

Prehistoric Suserup Skov (in short)

A local pollen diagram (Hannon in prep.) shows that Suserup has had a long forest continuity with only minor human impact during the Late Atlantic period. The immigration of beech (*Fagus sylvatica*) and the demise of lime (*Tilia cordata* and *Tilia platyphyllos*) is evidenced from quantitative, stratigraphic analysis of plant macrofossil remains in conjunction with pollen analysis of a small (20 x 30 m) closed canopy basin. The macrofossils in Suserup Skov are diverse and well preserved and have supplemented the pollen data by confirming local presence of other tree species such as poplar (*Populus sp.*) and scotch pine (*Pinus sylvestris*). The results suggest, that the former lime forest was an intimate mixture of many tree species. The demise of lime is closely linked with human disturbance, which together with fire episodes, facilitated the eventual immigration of beech during the Iron Age (Hannon, pers. comm.). Furthermore, traces of prehistoric field terraces and boundaries found in parts of the forest suggest a local and temporary discontinuity of the forest ecosystem (Nielsen 1984, p. 151). At the beginning of historic times, Suserup was nevertheless still a village dominated by the forest.

Medieval Suserup

Suserup occupies a very special place in the agrarian history of Denmark. Notes in the so-called 'Book of Gifts' (*Liber Donationum*) of the Cistercian Convent in Sorø apparently contain the first documentation of three field rotation in Denmark, and they furthermore mention one of the village founders by name. Hence for generations of Danish historians, 'Bjørn the Peasant of Suserup' has played the role of an archetypal medieval farmer (Arup 1925, pp. 277 ff).

The *Liber Donat.*, the only extensive edition of which is still to be found in *Scriptores Rerum Danicarum* (1776, pp. 483 ff) was written c. 1440 (Hørby 1988) to serve as documentation of substantial acquisitions of land that followed the founding of the convent in the 1160s. Letter extracts contained in the *Liber Donat.* are published (with parallel translations to Danish) in *Diplomatarium Danicum* (Dipl Dan). A translation of the complete text to Danish is found in Ranvig (1976).

The main passage about Suserup, referring to some time between 1202 and 1214, tells us that Tyge, the Dean of Roskilde, by right of inheritance owned a »property and farmstead« in Suserupøster (East Suserup) (Dipl Dan I:4, no. 63). He handed over one half of his property to the Convent, while one third (consisting primarily of woodland) went as his sister's dowry to a man named Bjørn. »Bjørn cut down a great part of the wood and grubbed new land for fertile fields, and he resided there himself and his descendants after him for a long time.« After the death of Bjørn, a conflict arose between his descendants and the convent, concerning the rights to »woodland, meadows, a water mill and several other landed property« in Suserup (Dipl Dan II:1, no. 142). But after negotiations in a tribunal of noblemen, an agreement was reached in April 1254: in Fiæringschow and Thagmose 2/3 should belong to the convent and 1/3 to the heirs of Tyge; Vgleura should pertain solely to the convent; Grefftebiergh and a meadow in Kitlingehawe with its three fields should belong to the heirs. »Of these three fields, the first is in Dampswang and Agherhøwsagher

with the meadow Kitlingehawe, the second in Siøwang is Ørnebergs agher and Withemose Meadow, and the third in the western field is Rythe with the meadow Rowelands Meadow, but all the woodland attached to Suserup, which lies east of the mill stream, should belong to the convent, while the woodland lying west of the same stream should belong to the heirs. But Damps Thyrne and the old Mill Site shall eternally belong to the convent as peacefull and safe possession.«

Thus, here and elsewhere the Liber Donat. introduces a number of place names seemingly connected with the village Suserup (orthography according to *Scriptores Rerum Danicarum* 1776 with corrections in Jørgensen 1991): the village names Suserup (Susætorp), Suserupøster (Susætorp Östre) and 'novum Susethorp', the natural names 'Suserup Skov, called Pukizeberg' (silva Susorpe dicta Pukizebiergh), Fjerdingskov (Fiæringschow), Tamose (Thagmose) and Uglevrå (Vgleura), and finally the unspecified Grøftebjerg (Grefftebjerg) with a number of subordinate field names and natural names Kitlingehawe, Dampswang, Agherhöwsagher, Siøwang, Ørnebers agher, Withemose Meadow, Rythe and Rowelands Meadow.

The ending -torp in the village name suggests, together with the vivid description of Bjørn's endeavours, that Suserup, as many other colonial settlements of the Middle Ages, was founded *in the forest*. Furthermore the triple reference to Susætorp, Susætorp Östre and novum Susæthorp indicates, that more than one medieval settlement existed within the present village boundary. This division *may* have emerged from the east-west property division between the convent and the heirs of Tyge, which followed the mill stream.

Unfortunately, it has been possible to correlate only a few of the 13th century place names with presently known localities. Most likely, the list of field names does not belong to Suserup but rather to an unknown settlement called Grefftebjerg (Frandsen 1983a, p. 8), which has tentatively been identified with either the village Grøfte (Kindertoft parish, Slagelse hundred) or the natural name Grøftebjerg (Munke Bjergby parish, Alsted hundred) (Jørgensen 1991). The latter identification is most likely, since only Grøftebjerg has a lake (Siøwangen = The Lake Field) in its vicinity.

Other names may be identified as follows (Jørgensen 1991, note 2). Fiæringschow = Fiering skoufuen (the name relates to the medieval land assessment units: bol - fjerding - otting), known from the Land Register (Matriklen) 1688 and localised by the field Fierdingkar Ager on a 1788 map in the southern fringe of Lyngø (north of Suserup). Thagmose = present Tamose, the fen east of Suserup Skov. Uglevrå = Vglevraa, mentioned in a 1680 Forest Survey immediately before Sußerup Vange, but not localised (Rigsarkivet (RA), Rentekammeret (Rtk.) 333.15). Finally, it must be noted that Dampswang (in Grøftebjerg) may be connected with either Dams Aasen in Lyngø-Eskilstrup (west of Suserup) (Danmarks Riges Breve 2:1, 1938, p. 106) or Damose in Topshøj Skov (north of Suserup) (Trap^s, 8:722)(Fig. 2). None of the remaining place names can be identified with sufficient certainty. See examples in Danmarks Riges Breve (2:1, 1938, pp. 105 f; Jørgensen 1991, p. 115).

Hence, this solitary 13th Century reference to Suserup gives the impression of a village dominated by woodland. Apparently, village boundaries were still not completely fixed (Fiering skoufuen recorded as belonging to Suserup), but the 'village' may still have consisted of two or more settlements on each side of the mill stream.

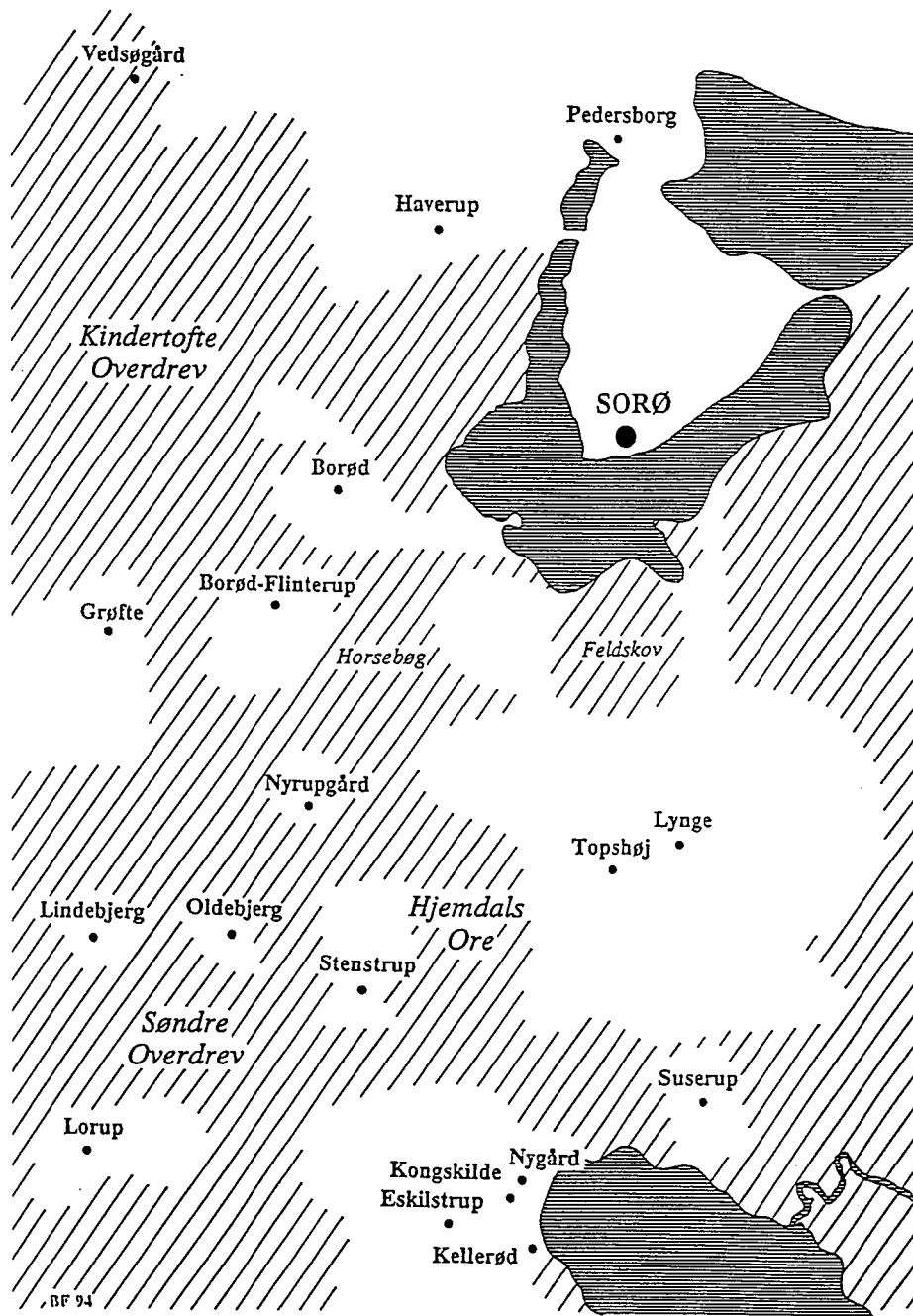


Fig. 2. The wood cover of the Suserup region c. 1770 according to a map drawn on behalf of The Royal Danish Academy of Sciences and Letters (VSK). The names of some of the larger forests mentioned in the text are shown in italics.



Fig. 3. Section of Johannes Mejers map of the Sorø Area c. 1659, showing i. a. the place names Suserup, Smerdijck mølle, Theyllahde (?) and Weinestrup See. Det kongelige Bibliotek.

The mill is documented from a number of sources during the 16th Century (Kancelliets Brevbøger 18.2.1575, 5.5.1583, 26.5.1604; Kronens Skøder 30.5.1586), and its production of flour was assessed in 1664 and again in 1689 (RA, Rtk. 311.105; Hansen 1936). The cartographer Johannes Mejer shows c. 1659 a Smerdijck mølle (interpretation uncertain) west of the village, but unfortunately his map section of the Suserup area is corrupted (Fig. 3). Presumably by Mejer's confusion of measuring points (Mensing-Kristensen 1990). It has been attempted to reconstruct the Mejer map by a merger of two streams (north of Tystrup Lake), which has produced a Suserup Mølle west of Suserup, and localised Smerdyck Mølle east of the village. It is, however, doubtful, that this attempt provides a credible description of Suserup c. 1659. Both a map drawn in 1770 on behalf of The Royal Danish Academy of Sciences and Letters (VSK) and a younger map produced in 1799 by the Royal Road Commission (Generalvejkommissionen) (Fig. 4), places Suserup Mølle in the road curve in the eastern part of the village. And since the existence of *two* mills is completely undocumented, the most liable interpretation is, that the present alder swamp in the village is a relict of the mill pond, and that the mill stream consequently has connected this spot with Suså through Tamose. This means, that the woodland including the present Suserup Skov, according to the agreement, belonged to Tyge's heirs and not to the convent.

In written sources from the 17th Century (maybe already from 1460) (Københavns Universitet, Institut for Navneforskning) a solitary farmstead, Nygård, appears to belong to Suserup (e. g. RA, Matriklen 1688:146). According to both VSK 1770 and a map of the neighbouring Antvorskov Cavalry Estate drawn 1771 (Kort- og Matrikelstyrelsen: Bugge 1771; Fritzbøger 1991), Nygård (= New Farm) was located in the western most outskirts of Suserup, just east of Kongskilde mill pond. Under the name 'Frederikskilde', it

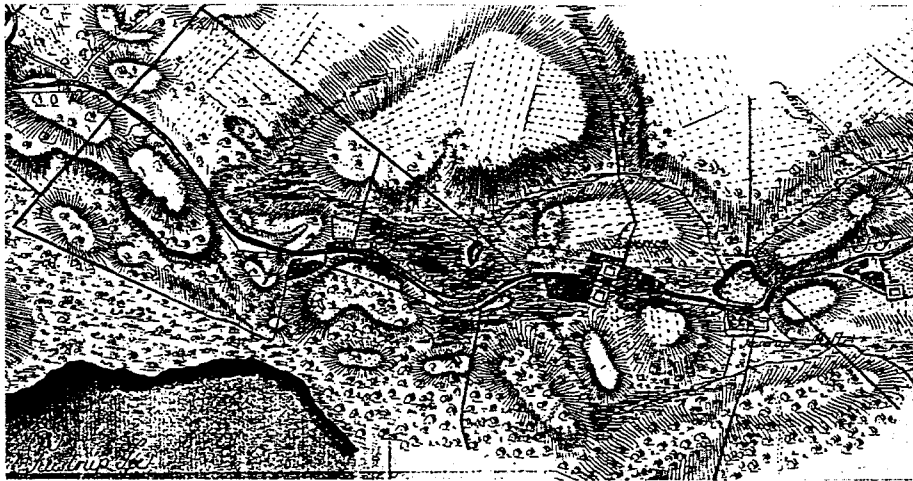


Fig. 4. Section of a map of the highway between Ringsted and Skælskør, drawn upon request of the Royal Road Commission in 1799. The function of the fencing system indicated is not perfectly clear, being in some points so very different from the post enclosure situation (Fig. 5) as is the case. Unfortunately, the map does not show the entire area of present day Suserup Skov, but the discontinued fence sign south east of the village might represent the earth bank visible in the central part of the forest today. Danish National Archives, Copenhagen.

was later separated by a (still existing) stone wall from Suserup. Presumably Nygård moved out from Suserup some time during the Middle Ages, hence, it may be identical with the 'novum Susethorp' of the Liber Donat.

Post Medieval Landscape Structures

Some time during the Late Middle Ages, the convent in Sorø acquired the remaining part of Suserup Village. During the Reformation (1536), however, Sorø as other church lands was confiscated by the crown (Sorø 1923-31 I). So, ever since a Noble Academy was founded in the former convent buildings in 1586, the annual rents and labour services of all four Suserup farmsteads (together with the returns of the entire neighbourhood) served as financial basis for this institution (Kronens Skøder I 1892, pp. 301-302).

It is evident, that the abundance of woodland that characterized medieval Suserup continued until late in the early modern period (fig. 2). Lists of peasant provisions with fuel wood and timber show that trees dominated a great number of localities within the village boundary, even though numerous place names have not been definitely localised (spot check 1610-23 in RA, Sorø lens jordebogsregnskaber). At several occasions beech trees were provided from a place next to 'Suserup Field Gate'; 'Suserup Field' delivered oak, ash and beech trees in all ages and qualities; 'Suserup Garden/The Convents Garden in Suserup', recorded in a legal document from 1614/15 (Sorø 1923-31 I, p. 195), on several occasions produced ash trees as fuel for a brick kiln; woodland 'by the main road' (wid landeweyen) provided beech branches; 'Vesterskov', most likely Broby Vesterskov east of Suserup or, hypothetically, a wood west of Suserup, provided beech trees; the surroundings of 'The Clay Pits'

(Lehergrauffuene wed Suserup) produced beech trees; 'Suserup Path' (Suserup Stræde/paa gaden), i. e. the built-up nucleus of the village, contributed with oak and ash trees; 'Tamose' (Thaagemoeße/Thagmoeße) produced coppiced fence materials; the unidentified 'Fiskermose in Suserup' (Fischermose i Suserup Vang) provided hoops, presumably made out of hazel or willow; 'Lilleore' (virtually: The Little Common), recorded in 1682 as a furlong in Brobyskovsvangen (see below) and characterized as 'skovhumper', i. e. a mixture of woodland and arable fields, produced oak trees; finally, 'Fjerdingskoven' (see above) provided the peasantry with beech trees.

This picture of woodland predominance, is well supported by old maps. Even though the accuracy of Johannes Mejer's map together with that of other 17th and early 18th Century maps (e. g. Rigtig Deliniation ... 1698 and Ryttergodskort 1720, Det kongelige Bibliotek) is restricted, it is noteworthy that most old maps show a quite considerable woodland signature around Suserup. More reliable are, however, maps from the 1760s and onwards, originating from triangulation and precise measurements. So, the VSK 1770 already mentioned, constitutes the first in a series of mutually comparable maps.

VSK 1770 shows a rather long village organized along the east-west road as Suserup, Suserup Mølle and Suserup Huuse (= S. Cottages). The road system is basically identical with the present. Approximately 50 % of the village acreage is woodland, major zones of arable land being concentrated in the low, level areas south-east of the village and in the sandy hills in north-west. The precipitous slopes along the northern shores of Tystrup Lake are all covered with stretches of woodland, including the present Suserup Skov. So, the overall picture is fairly identical with a description from 1697, according to which »there still exist some woodland in the fields of Suserup and in the south towards Vinstrup (= Tystrup) Lake, with the other sides facing Suserup. Only scattered oak wood« (Sorø 1923-31 I, p. 197).

This abundance of woodland is reflected in the composition of the rural production. According to the 1664 Land Register (RA, Matriklen 1664), 78% of the manorial rents in kind consisted of the reliable pasture indicator *butter*. Hence, owing to the village's relatively insignificant cultivated acreage, animal husbandry based upon the primary production of the wastelands formed the predominant means of subsistence for the tenants of Suserup. On the rich glacial deposits in eastern Denmark, such wastes were often covered by woods.

On the other hand, all fields were utilized as common pasture when fallow and after the annual harvest, and since the fields contained a great abundance of trees, it was estimated that in 'good years' 57 swine could be fattened on the beech and oak mast alone. Unfortunately, no series of pannage assessments have been detected, which could enable a more thorough evaluation of the woodland structure (Fritzbøger 1990).

During the 17th Century, Suserup had a heavily fuel consuming brickyard, that is mentioned in the County Account (lensregnskab) of 1622/23, in the Land Register 1688 and indicated in the Mejer Map of 1659. The pre-enclosure name Teglgården ('tegl' = tile) of the present day Suserupgård should maybe be interpreted in this context. Nevertheless, trees from the woods of the village and its vicinity were primarily used as fuel wood and minor timber for the Academy and as provisions for its tenants. Hence, it is remarkable that already in 1582, the extensive woodland stretching from Slagelse to Sorø was unable to deliver large dimensions of building timber for Antvorskov Castle (Sorø 1923-31 II, p. 14).

Outside its boundaries, Suserup was surrounded by woodland. To the north, only a narrow strip (presumably 'Fjerdingskov') indicated the boundary towards the large clearance of the parish town Lyngø. Both east and west of the village, however, the landscape was dominated by a variety of individual field woods, fenced woodlots and common wood pastures (for terminology see: Fritzboøger 1992, pp. 173-201), the most prominent of which being Hjemdals Ore and Søndre Overdrev (fig. 2). The commons were of capital importance for villages without paddocks or alternative permanent pastures of their own. In 1682 Suserup was such a village (RA, Matriklen 1688:150), and accordingly a substantial part of its production depended on the access to Hjemdals Ore.

During the 17th and 18th centuries, all woodland within Suserup is characterized as field woods, i. e. woods lying dispersed among cultivated furlongs and meadow strips. According to the Land Register of 1688, Suserup's arable land was (until the enclosure in 1792) divided into 3 fields (Sandvang, Lillevang and Brobyskovvang) with the traditional rotation pattern of Zealand (barley - rye - fallow) (Frandsen 1983b). Unfortunately, no traces of field boundaries can be deduced from the Land Register Map 1806 (OI-Matrikelkort, Kortog Matrikelstyrelsen; fig. 5). However, even though an exact localization is

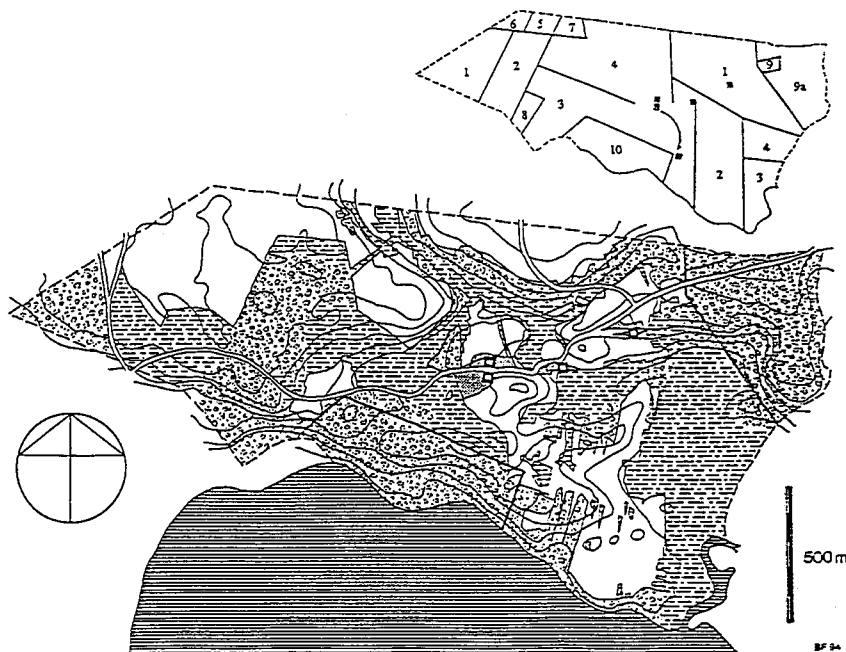


Fig. 5. Topographical data extracted from the Land Register Map of 1806: woodland, meadows, farmsteads (with gardens) and roads. Modern altitude curves have been added. The three designated wood preserves are all demarcated by stone wall signs. In the upper right corner a sketch map is showing the farm boundaries after the enclosure: 1-4 farms (all of them with their land split on two different places), 5-9 smallholdings (including a forest guard's cottage, no. 9) and 9a-10 the two larger forest reserves. Some years after the enclosure, Teglgården (farm no. 3) left its old place in the village, was situated just outside Suserup Skov and renamed Suserupgård.

impossible, it is feasible to give an impression of the relative whereabouts of the three fields.

'Sandvangen' i. a. consisted of furlongs called Sandagre (sand = sand) and Grusåsen (grus = gravel), why it probably should be located in the north-west corner of the village where the remains of extensive gravel pits of this century are still conspicuous. This interpretation is furthermore supported by the fact that in the Land Register 1688 Kongskilde Mill follows immediately after Suserup Sandvang.

'Brobyskovsvang' naturally has to be the eastern most of Suserup's fields, adjoining Broby Vesterskov to the west. Consequently, 'Lillevang' with the furlongs Store Bierg, Skiden brincke Aggere, Nywele stöckerne, Skielle wred, Garnet Aaßen, Holm aggerne and Skaustöckerne must be located to the southern/central part of Suserup, bordering on Tystrup Lake. So, in all probability, a major part of the present Suserup Skov should be found in Lillevangen, which (besides the Woodland Parts (= Skaustöckerne)) consisted of several coppices according to the Land Register.

Being a field wood, it is very likely that parts of Suserup Skov from time to time has been utilized as arable fields, although there are no traces of such activities in the analysed cartographic material. On the other hand, there seems to be modest traces of both celtic fields and (medieval?) ridges and furrows in parts of the forest floor (Nielsen 1981, pp. 31 f). And, furthermore, it is likely that the earth bank situated in the northern, central part of the present forest with an angle of approximately 65° on the forest boundary, is the relict of an original field boundary.

It proves impossible to give an exhaustive picture of the pre-enclosure field woods of Suserup. In 1730, a Forest Survey (RA, Rtk. 333.17) described two fields in the following way: »The field of Suserup Village, called Møllemarken, length 1½ quarter of a mile long and the same width, a great deal of oak and beech trees, a few old, mostly young, but only a small shrubwood of alder. Lillemarken, of the same village, the same extension, mostly consisting of old and young oak trees, a few medium size beech trees and also a pretty fine shrubwood of hazel.« 'Møllemarken' must be identical with either Sandvangen (if the mill is Kongskilde) or Brobyskovvangen (if the mill is Suserup Mill).

Land Reforms and Forest Enclosure c. 1800

Since the Late Middle Ages, Sorø Convent/Academy was the sole proprietor in Suserup, so when radical Land Reforms swept through the Danish countryside during the last decades of the 18th century, they simply formed an internal reorganization of the Academy's manorial economy. This is why written sources to the history of the reforms, in the case of Suserup, are relatively few.

Before the reforms, the landscape was dominated by open fields divided into a multitude of individually cultivated strips. When used as pasture after harvest, however, these fields were common, and most natural resources were submitted to varying degrees of common property rights. It was the chief purpose of the Land Reforms to substitute all such communal ownership with complete, private property by the consecutive implementation of enclosure and freehold.

As far as wooded areas were concerned, the problem of common ownership was particularly complicated (Fritzboøger 1994, pp. 338-342). In general, the land owner held an exclusive right to utilize the so called overwood, i. e. all tall mast and timber producing trees. The shrub wood (underwood), on the other hand, was normally allotted to the tenants together with pasture right. So, a single woodland area would often be subject to two layers of property rights. When such areas were enclosed, the land owner was considered to be the proper proprietor of the prospectively fenced and conserved woodlot, whereas the holders of coppice and wood pasture rights, received an area outside the fence as due compensation for their loss. Usually, remaining trees outside the new, clearly demarcated woodlots were cut down in few years after the enclosure.

One of the first steps, when traditional multiple use forestry was converted to modern tree production, was a thorough recording of the stock of trees as well as the felling. In Sorø Academy such data were recorded in annual Forestry Accounts (Forstpengeregnskaber), which give a first impression of the economical potential of the Suserup woods (RA, Sorø Akademis Forstpengeregnskaber 1791-1851). In spite of its title, the series apparently ends with 1835/36. Owing to bad preservation, however, we have only had access to accounts from the period 1791/92-1801/02.

The accounts mention two woodlots, Suserup Lillemark and Suserup Vesterskov, the first of which included the present Suserup Skov. Hence, according to fuel and timber prescriptions (RA, Rtk. 3322.339-343), the freeholders Jens Johansen and Lars Sørensen had their farms in the previous Lillemark, and Suserup Krogen (synonymous with Suserup Skov) was considered to be placed in the lands belonging to Jens Johansen. When compared with later stock records, however, the interpretation of these accounts poses some serious problems.

During the 1790s the felling rate was very moderate and the stock consequently nearly unchanged by the end of the decade. The stock record contains informations about 1) the number of fresh oak trees distributed on diametres (Fig. 6), 2) the number and volume of hollow oak trees, and 3) the cubic content of fuel wood in beech trees. On this basis, the total stock of wood in Suserup Lillemark (diameter > c. 10 cm) 1791/92 can be calculated to c. 2984 m³, 97% of which consisted of timber oaks. Since the field boundaries are unknown, no means to determine the extent of the wooded part of Lillemark (on the 1770 or 1806 map) exists.

The very distinct predominance of oak corresponds well with the 1730 description (see above). On the other hand, the modest volume of beech is contradicted by the forester G. C. Ulrich, who in 1807 assessed the wood content of Suserup Krogen (i. e. only a minor part of Lillemark) to 1000 m³ of beech wood plus 2-300 mature timber trees of oak (RA, Rtk. 3322.336). Ulrich's figures correspond well with later records contained in Management Plans (Fig. 7).

It is possible that some of the evident discrepancy between the 1791 and 1807 estimates is the outcome of dissimilar lower diameter limits for the trees included. If a gradual conversion from oak to beech was taking place, a considerable volume of young beechwood may have been excluded from the 1791 survey, the lower limit 10 cm being somewhat uncertain. The fact that more oaks than beeches were removed from the surroundings of Suserup Skov during the years immediately after the preservation (see below), furthermore supports the 1791 allegation of oak dominance.

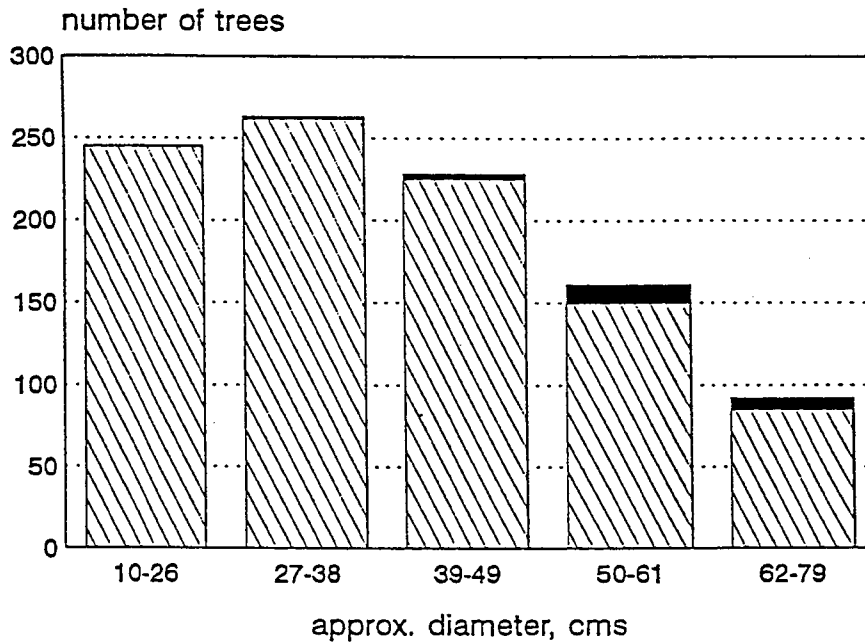


Fig. 6. The number of fresh oak trees in Suserup Lillevang 1791/92 distributed on diameter dimensions (RA, Sorø Akademis Forstpengeregnskaber). Stem circumferences were recorded by the ancient unit 'spand' corresponding to 6-8 'tommer' (2.62 cm) (Rasmussen 1975, p. 88). Black sections indicate the feelings 1792-99. In the calculation of approximate diameters, a spand of 7 tommer was used (18.3 cm).

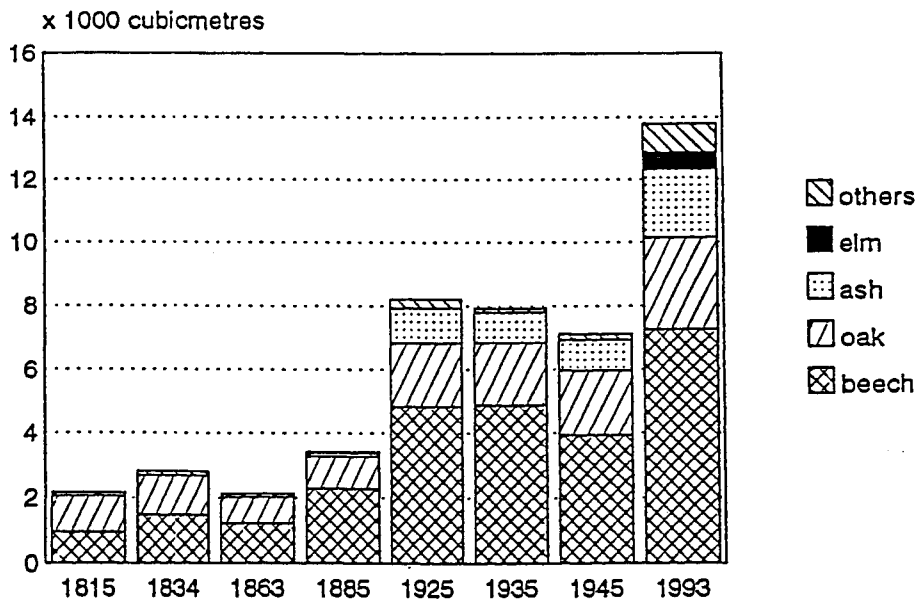


Fig. 7. The composition of dominant tree species in Suserup Skov 1815-1993. In 1834 'others' covers ash and elm; in 1935 alder and elm.

Moreover, the possibility that Suserup Skov traverses a former field boundary (the earth bank) might suggest that some of the 1807 beech wood was not situated in Lillemark but rather in the neighbouring Sandvang.

The open fields of Suserup were enclosed in 1792 (Trap 5 8:721; Kort- og Matrikelstyrelsen: Matriklen 1844). The village lands were divided between 4 new farmsteads (each of which with c. 55 hectares) and 5 cottages in such a way that each farm held 2 lots and the cottages were placed in the periphery of the village. In 1798, the possession of the four farmsteads was converted to hereditary tenure (LAS, Kortsamlingen 66-156 - 66-161), a status very similar to actual freehold.

In 1807, some years after his attainment of hereditary tenure, it was suggested that Suserup Krogen in the former Lillevang covering c. 18 hectares should be integrated in the holdings of the farmer Jens Johansen (RA, Rtk. 3322.336). The arable fields of his farm Teglgården (no. 3) totally surrounded the wood. However, the forester intervened with a petition that the wood should be conserved, and on the 14th February the Royal Exchequer (Rentekammeret) resolved that Suserup Krogen should be a forest reserve (RA, Rtk. 3322.336). Furthermore, c. 21 hectares of wood had been enclosed with a stone wall in the north-east corner of the village (Broby Vesterskov) and a tiny lot belonging to farm no. 4 was designated for the propagation of new woodland. In 1844, however, it was still treeless and it is doubtful whether this forest reserve to be was ever accomplished. The Land Register Map (Matrikelkort) 1806 indicates the ostensibly fenced area: Fredskov (Forest Reserve). The 1844 Land Register, however, only mentions that the area is »conserved for silviculture«.

At first, the new forest reserve at the shores of Tystrup Lake kept its old name Suserup Krogen for some time (RA, Rtk. 3322.336). But soon it was called either Suserup Indhegning (fence) or the name which was to prevail in the long run: Suserup Skov. E. g. the Management Plan (Driftsplan) 1815 uses Krogen and Indhegning synonymously, whereas the plan 1833/34 uses both Krogen, Indhegning and Skov.

As a part of a great, economically managed forest district, Suserup Skov should of course be separated from the surrounding fields by a fence. Hence, 500 meters of stone wall were erected in 1807, but since most of the labourers were called up to military duty in the war against England, the wall was still not finished in 1809 (RA, Rtk. 3322.337; Rtk. 3322.251). It has not been established, when the remaining 650 meters were fenced.

Hereditary tenancy brought about a gradual abandonment of old customary rights to provisions of fuel wood by the landlord (RA, Rtk. 3322.340). Tenants were expected either to produce the requisite wood themselves or to buy it, and consequently the wooden stretches remaining in the enclosed fields were intensively utilised. E. g. in 1806, the possessor of Suserup Møllegård (no. 2) for the considerable sum of 659 rigsdaler obtained the right to fell the trees on his ground with the consequence that the area today is totally woodless (RA, Rtk. 3322.251, Journ. no. 175). The same applies for the majority of the village. The purchase price equaled c. 80 cubic metres of wood in the Copenhagen fuel market (Friis & Glamann 1958). In 1809 two other tenants gained a similar right, and during the years 1810-14 382 mature beech trees and 433 oak trees were felled in the former Suserup Lillemark, the immediate surroundings of Suserup Skov (RA, Rtk. 3322.342-343).

Stock and Harvest in Suserup Skov during the 19th and early 20th Centuries

After enclosure, demarcation of forest boundaries and ensuing clearings of scattered trees in adjoining fields, all data concerning forest conditions and wood production covers the exact area of present day Suserup Skov. This makes long time comparisons possible.

By varying methods, the stock of trees have been recorded in a consecutive series of managements plans during the 19th and early 20th Centuries. Two duplicate series of management plans (1815, 1833, 1885, 1895, 1925, 1935, 1945) are preserved: one in the Forest District in Sorø and one in the National Forest and Nature Agency, whereas a vast supplementary material of Control Records (driftskontrolbøger) is found in the Regional Archives (Landsarkivet (LAS)). The development in the total volume of wood (m³ per hectare) is reported in table 1. It must be noted, that for the period 1815-1925 only larger trees are presumed to have been measured, the lower diameter limit being unfortunately unknown. It might however, as in 1791/92, be as low as 10 cm. In 1935 and 1945 the lower limit appears to have been 20 cm, and in the 1993 registration all trees > 3 cm were measured (Emborg, Christensen & Heilmann-Clausen, 1996).

In general, beech trees were considered as fuel wood whereas oak trees were separated in 'old and hollow' trees for fuel wood and 'young and fresh' trees for timber. The composition of the dominant tree species in relation to volumes of wood is shown in fig. 7.

The gradual prominence of beech was already detected by the keen botanist Christian Theodor Vaupell (1821-62), who in the 1850s described how »the young trees have had the opportunity to try their strength against the old. As usual the oak has given no regeneration, while there is plenty of elm and, especially, beech« (Vaupell 1863, p. 214).

The general development of the stands can be followed through the management plans. The first plan for the Sorø Forest District was issued in 1815, according to which »the main stock of trees consists of oak and beech trees ready to be cut, all of them still sound and fit and well growing. Among

Table 1. *The approximate volume of wood in Suserup Skov 1815-1993**

Year	Total stock (m ³)	m ³ /hectare	Lower diam. limit (cm)	Average diam. (cm)
1815	2153	113	30	40-45
1834	2813	147	35	45-55
1863	2129	112	no data	no data
1885	3410	180	30	40-60
1925	8214	430	40	45-60
1935	7925	415	20	30-66
1945	7607	398	20	35-68
1993	12964	679	20	
** (1993)	13885	727	3)	

*All pre 1885 measurements were implemented by the 'Ocular Method', which gave a considerable element of uncertainty. From 1885 and onwards all measurements were made by use of a Vernier gauge. Volume specifications in fathoms have been converted to m³ (1 Danish fathom ~2.225 m³ (including space) ~ 1.34 m³ solid wood. Estimates on average diameter dimensions etc. are based on Møller (1961).

** Emborg, Christensen & Heilmann-Clausen 1996.

the beech and oak trees grows a number of good ash and elm trees. The old forest is still so dense that it can be rejuvenated by means of natural sowing, and regeneration, especially of elm and ash trees, already exists.«

In 1833 the forest description concluded, that Suserup Skov »contained a considerable stock of old forest, even though it is hardly dense anywhere. An extraordinary regeneration, among which lots of ash and elm trees, has sprouted up«. The beech and oak trees were in general considered to be 'over-ripe'.

In the 1885 Plan, the major part of Suserup Skov was described as »a scattered stand of old, huge and tall beech trees with broad canopies mixed with generally sound oak trees and ash and elm trees in different ages. Partly dense understorey of elm trees mixed with beech and hazel.« The north-east corner was described as ancient oak forest with an understorey of hazel, elm and beech. This divergence between the 'oak part' and the rest of the forest, is visible already in the 1833 Plan.

On the basis of taxations executed as part of the management planning the average gross stock increase for the period 1885-1925 has been calculated to c. 6 m³yr-1ha-1, which is fairly identical with the value 1945-93. To evaluate the development, however, it is necessary also to consider the fellings of the period. Unfortunately, there are no conclusive series of felling records for the entire post 1792 period, but for a number of years some indications of the volume do exist. The existing felling data 1833-1930 (converted into m³) are

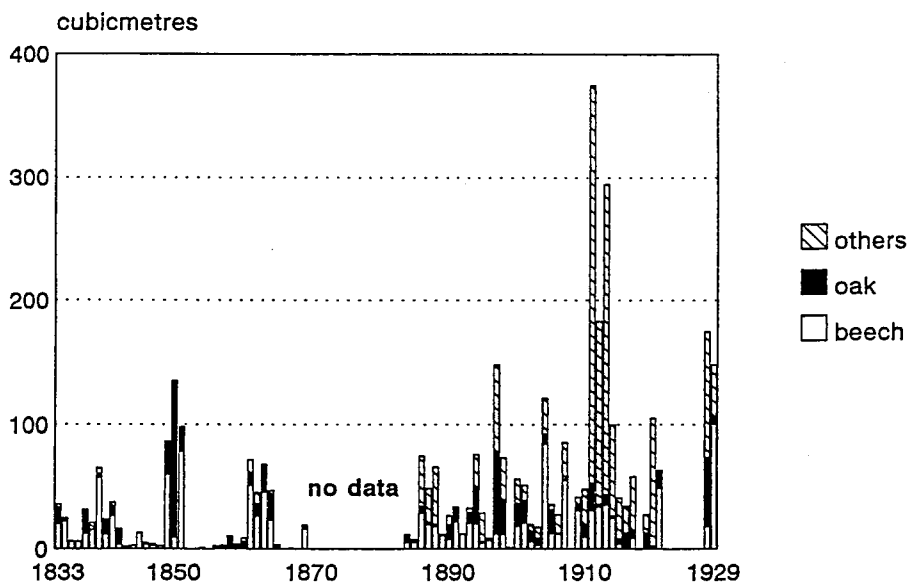


Fig. 8. The annual fellings and thinnings of wood in Suserup Skov 1833-1929. On account of the presence of twigs and other minor wood assortments, a general conversion invariable between 'm³ wood including space' and 'm³ solid wood' has been defined as 1 rummeter ~ 0.5 m³. On this basis, wood measures have been converted to 'm³ solid wood' by the following conversion table: 1 fod³ ~ 0.0202 m³, 1 favn = 55 fod³ ~ 1.11 m³, 1 bunke = 25 fod³ ~ 0.51 m³. For the post 1883 period the figures are conclusive, whereas the source material to the pre 1884 fellings is clearly incomplete. I.a. it can not be established for certain, if dead trees and twigs gathered by the locals are included.

recorded in fig. 8. The Control Records and Yield Records (Udbytte- (Skovnings-) protokoller) containing these data are found in the Regional Archives, Copenhagen (LAS).

It should be noted, that in addition to regular cuts the Sorø Forest District was ravaged by severe tempests in 1863, 1880, 1894 and 1902 (Sorø 1923-31 II, p. 85) the effects of which are, however, not very conspicuous in the felling records. Compulsory fellings during World War I proves to have affected Suserup Skov in far greater scale, possibly leading to the conservative measures taken during the following decade.

The management plans give very little information about silvicultural activities, most likely because virtually no artificial rejuvenation took place in Suserup Skov. All the more interesting is a message given to the members of the Forest History Society in 1966, that a number of c. 100 years old lime trees had been 'planted' in the 19th Century (Nielsen 1966). No written evidence of such plantings is known. On the other hand, a management record indicates that 125 beech trees were planted in spring 1853 (LAS, Controljournal B, 1852-54).

Early Forest Conservation

In his posthumous book 'De danske Skove' from 1863, Christian Theodor Vaupell relates how Suserup Skov was managed by minimal intervention with the result that the natural competition between oak and beech trees progressed unimpeded (Vaupell 1863, p. 214). No explicit decision about this conversion to minimal intervention is known, and in 1833 Suserup Skov still did not appear in a list over »minimal intervention forests and woodlots conserved as ornaments« of the Sorø District (Driftsplan 1833/34). In a so-called Control Account (LAS, Controljournal B) for the years 1852-54, however, the forest is mentioned as park (lystanlæg), and the management plan 1885 informs us that »the forest is managed as minimal intervention forest«. Hence, since the middle of the 19th Century, Suserup Skov has been subject to a particularly conservative forestry.

A conspicuous element in the early conservation of Suserup Skov, was the marking of prominent beech and oak trees with capital Z's for 'Zir' = Ornament. No written sources give their exact date. The minimum diameter of these Z-trees proves to be 80 cm, corresponding roughly to 170 years of age (Christensen, pers. comm.). Of 73 trees, the 12 smallest are found in the 80-89 cm diameter group and the 2 largest in the 140-149 group. Since the trees obviously held an considerable size when marked, the marking must have taken place over some decades beginning c. 1850.

During the 19th Century recurrent botanical field trips from the Academy went to Suserup (Bredsdorff 1834-35), and since the middle of the century the forest guard's cottage (Sarauwsminde) situated in the forest formed a popular destination for the Sunday picnics of Sorø residents. Public footpaths were established (LAS, Controljournal B, 1852-54) and discussions about how to conserve the very gem of the forest's natural beauty, the lake view, began (LAS, Journal 69, 9. 8. 1878). Suserup Skov was, thus, far from being an 'ordinary forest' when it was administratively conserved in 1925. In fact, partial conservation for recreational purposes had taken place for decades.



Fig. 9. The still open, flowering meadows along the edge of Tystrup Lake, photographed in 1929. After Danmarks Naturfredningsforenings Årsskrift 1929-30.

Conclusions

At least since the Middle Ages, but probably much longer, the area presently occupied by Suserup Skov has been heavily affected by Man. As an integral part of the open field rural landscape, the woodland of the then Suserup Lille-mark was subject to both grazing animals, temporary cultivation and selective cutting of trees. Modern woodland management, on the other hand, was not initiated before the enclosure of the 1790's, and even if a rather unstable level of firewood cuttings was maintained until this century, human impact since that time remained modest compared to other forests. No planting of major consequence seems to have taken place during the 19th Century, and since 1850 or so, the forest was protected for reasons of recreation.

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