

# Landscape Reconstructions in South Sweden for the Past 6000 Years

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**Summary.** Interdisciplinary research on the cultural landscape history since the introduction of agriculture has been performed within a coast-inland area of South Sweden—the so-called Ystad project. Palaeoecological and ecological research has been combined with archaeological, historical and geographical research. Landscape ecological maps have been reconstructed for ten time-slices on the basis of the following source material: present environment—subsoils, hydrology, modern as well as historical vegetation (AD 1700, 1815, 1915, 1985); past environment—lake/mire stratigraphy, shoreline changes, pollen and charcoal analyses; settlement history—archaeology, place names, written sources (from AD 1200), land survey acts, etc. Certain assumptions have been made on past land use and vegetation dynamics. The results are compiled in a map sequence (in conventional radiocarbon years) for 3500, 2700, 800 BC, AD 200, 1000, 1300, 1700, 1815, 1915 and 1985. Conclusions can therefore be drawn on landscape ecological patterns and processes through time.

## 1. Background to an interdisciplinary project

The present cultural landscape is the result of the interaction between man and environment. This means that it can be explained only after interdisciplinary studies focused on changes in time and space. A team of scientists from Lund University have been collaborating within the framework of the project “The Cultural Landscape during 6000 Years”, colloquially known as “The Ystad Project”, since 1982. About 25 scholars from six departments/

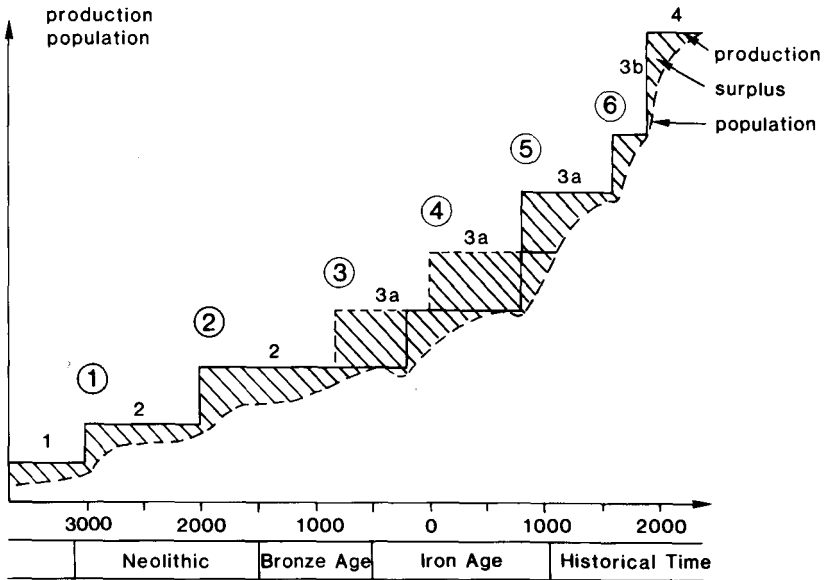
disciplines have been involved in this project, all with a holistic view of the landscape and its long-term changes—historical landscape ecology.

The general aims of the project have been as follows:

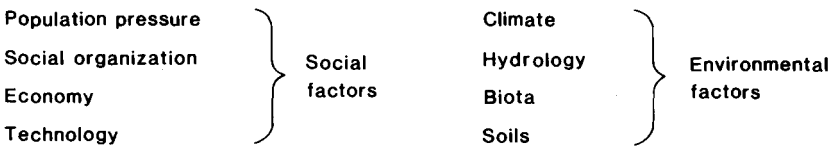
i) To describe changes in society and the landscape in a representative area of southern Sweden;

ii) To analyse the causes behind these changes and especially to emphasise the relation between land use, vegetation and fauna, primary production and consumption on one hand, and population pressure, social structure, economy, and technology on the other hand;

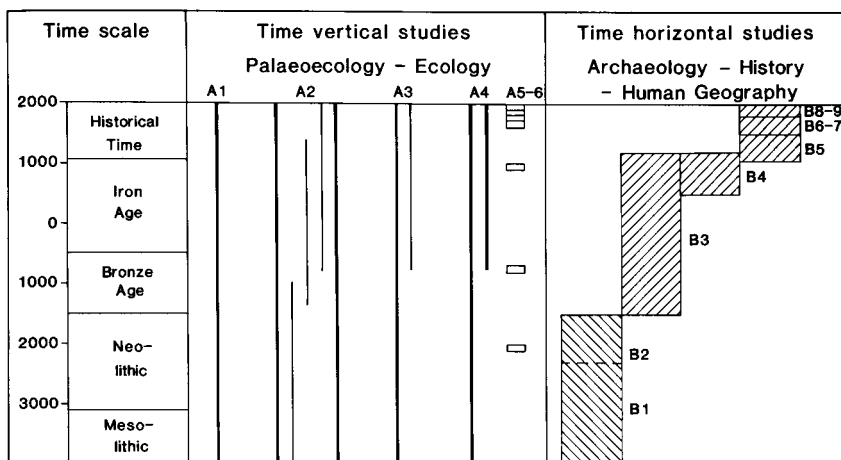
iii) To correlate and compare the investigation area with other areas in Sweden as well as other areas in Europe;



**CAUSES FOR CHANGES OF SOCIETY AND ENVIRONMENT :**



**Figure 1.** Multi-causal model for long-term changes of the cultural landscape used as a general hypothesis for the Ystad Project. Encircled figures 1-6 refer to expansion phases sometimes indicated in pollen diagrams (e.g., Berglund 1988). Time-scale in radiocarbon years.



**Figure 2.** Project organisation with participating university disciplines and sub-projects plotted against time.

iv) To contribute to a scientific exchange between participating disciplines, particularly concerning research approach, methods, terminology, etc.;

v) To contribute to the management of the natural environment and ancient monuments.

When initiating the project, we agreed on a general hypothesis about the development of the agrarian landscape, characterised by phases of expansion, consolidation, and regression. This pattern was first identified and described by palaeoecologists (e.g., Berglund 1969), and later discussed by archaeologists (Welinder 1975, and others). In our project we have proposed a dynamic multi-causal theory for the observed changes during prehistoric and historical times. We have illustrated this as a staircase for cultural landscape development (Figure 1).

The organisation of the project has been based on the hypothesis of the assumed expansion phases in the cultural landscape. The research projects have been of two kinds: (i) time-vertical studies, dealing with landscape changes in a long-term perspective, and (ii) time-horizontal studies, which are multidisciplinary studies dealing with selected periods of special importance for changes in society and landscape.

The time-vertical studies have been mainly palaeoecological and ecological in character, and have provided the framework for the time-horizontal studies. The arrangement of the sub-projects in time is shown in Figure 2. The details of the sub-projects have been presented by Berglund (1988). It ought to be mentioned that the natural science projects dealt with vegetation

history, palaeohydrology, soil erosion, vegetation reconstructions, and bio-production during selected time slices. Although one discipline has been mainly responsible for each sub-project, scientists from different disciplines collaborated within each. This means that there was close cooperation between researchers from six departments at the University of Lund during the period 1982–88, in some cases also including specialists from other universities or institutes. In addition, scientists from outside Sweden have been invited to cooperate.

The main publications of the project are three monographs, one about prehistoric society (Callmer *et al.* 1992), one about medieval society (Anderson and Anglert 1989), and one interdisciplinary synthesis (Berglund 1991).

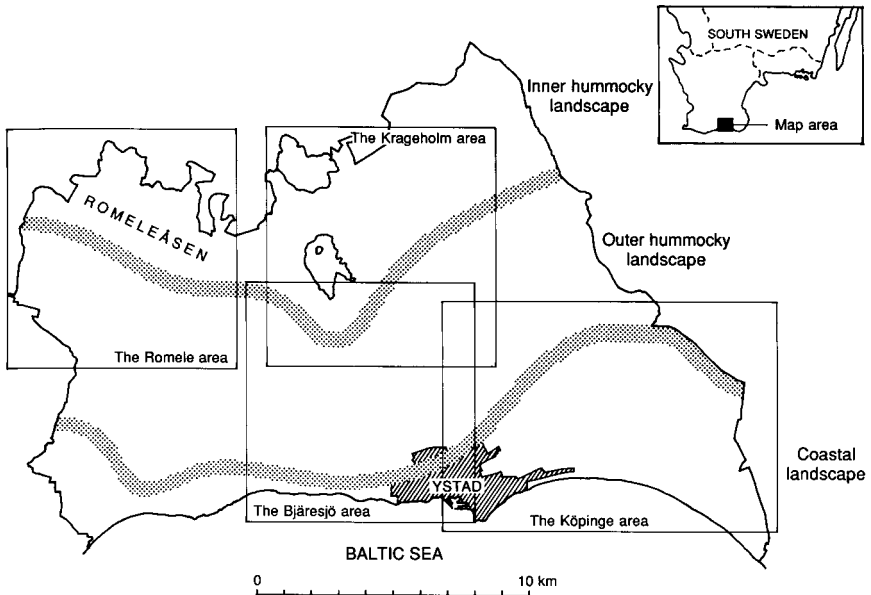
## 2. The study area

After careful consideration, the area adjacent to the town of Ystad on the south coast of Scania—the southernmost province of Sweden—was chosen as a suitable study area. Physiogeographically it is divisible into three landscape zones from the coast towards the inland (Figure 3):

- i) a coastal landscape with sandy soils (below 25 m elevation), today fully exploited for agriculture and settlement,
- ii) an outer hummocky landscape with clayey silty soils (mainly 25–75 m), today fully exploited for agriculture,
- iii) an inner hummocky landscape with clayey or stony soils (mainly 75–100 m), today partly forested and less suitable for agriculture.

This zonation implies a gradient from central to marginal settlement, which would also apply to prehistoric and historical times. It is representative of the present-day cultivated plain extending through southern and western Scania. With archaeological-historical and palaeoecological studies in each zone, it will be possible to make correlations and comparisons in time and space. We assumed that agrarian expansion reached the marginal area from the settlement at the coast. During historical time, big estates dominated the study area, and since medieval times, the town of Ystad has been the commercial centre. It is therefore possible to study the relationship between this centre and the surrounding countryside during most of historical time.

The studies have been concentrated in four focal areas also shown in Figure 3. They are assumed to be representative of each landscape zone. The source material was considered to be of high quality, including palaeoecological and archaeological evidence, as well as written documents and maps. The distribution of sites with pollen diagrams and other palaeoecological



**Figure 3.** Study area around the town of Ystad with the three landscape zones and four main focal areas indicated.

studies is shown in Figure 4. Good sites with continuous records of lake sediments or peat deposits are rare and not evenly distributed. Today only three lakes exist, and most peat deposits have been exploited for fuel.

We regard this study area as representative of southernmost Scandinavia, physiogeographically a lowland area with nutrient-rich, clayey soils situated in a nemoral forest region. From a settlement-historical point of view it is also related to other areas in South Scandinavia and areas around the South Baltic. The situation with a fertile coastal area contrasting to a less fertile inland area is typical of many landscapes in South and South-Central Sweden.

### 3. Source material for landscape-ecological mapping

One main task in this project was to compile evidence of past environment and settlement into maps illustrating the past landscape, in a way similar to that of modern maps. For the entire area, survey maps were constructed at a scale of 1:50,000 (published at 1:125,000). Ten time slices were selected (see Figure 6). For some small key areas and for a few periods, more detailed reconstructions were made at a scale of 1:10,000 (published at 1:25,000). Environment (vegetation, hydrology, etc.) has been combined with settle-

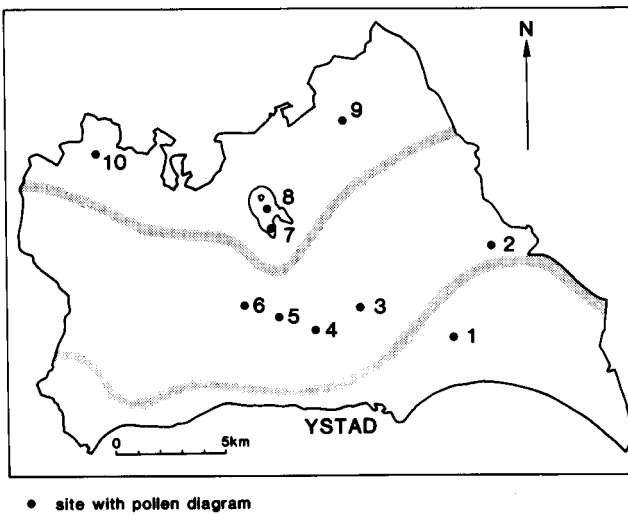
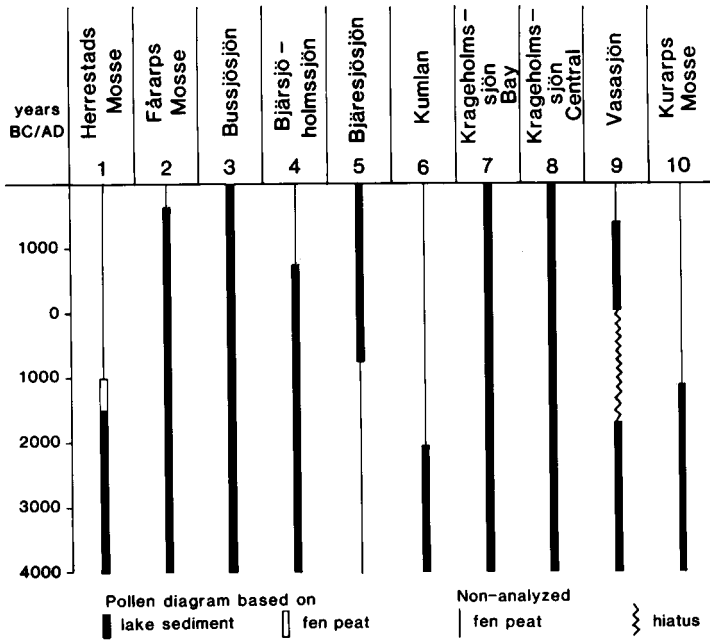


Figure 4. Survey scheme illustrating the time-span for each palaeoecological site with a pollen diagram. Site location is indicated on the survey map.

**Table 1.** Source material for landscape reconstruction

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|                                |
|--------------------------------|
| Present environment:           |
| Subsoil maps                   |
| Hydrology maps (1812)          |
| Vegetation maps                |
| Economic maps                  |
| Agricultural statistics        |
| Past environment:              |
| Lake and mire stratigraphy     |
| Shoreline changes              |
| Pollen analyses                |
| Charcoal analyses              |
| Land survey maps (1690- )      |
| Economic maps (1920- )         |
| Taxation records (1300- )      |
| Settlement history:            |
| Archaeology                    |
| Place-names                    |
| Taxation records (1300- )      |
| Land survey acts (1690- )      |
| Population statistics (1700- ) |
| Economic maps (1920- )         |
| Travel reports (1750- )        |

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ment and land use. Table 1 gives a survey of available source material for present and past environment as well as settlement history.

The vegetation reconstructions presented in the survey maps are based on various sources. For historical time, environmental information has been available in written records including maps. This applies to the time periods 1985, 1915, 1815, and the 18th century, which makes this series of maps quite accurate. The 14th-century map is based on some written documents beside knowledge of ancient settlement and results of archaeological excavations and palaeoecological studies. The vegetation is also interpreted from retrogressive analysis of the 18th-century map. In a similar way the Viking Age landscape is reconstructed on the basis of a combination of archaeological/palaeoecological information and a retrogressive analysis of the 14th-century map. However, the vegetation of the five prehistoric periods is mainly based on palaeoecological and archaeological results from the project. This means that the human impact is traced by means of pollen-analytical correlations as well as archaeological inventories. These reconstructions are tentative mappings which rely on a few investigated sites regarded as representative of areas with similar ecological conditions (soils, hydrology, etc.).

The settlement distribution in prehistoric as well as historical time has been compiled and outlined in survey maps (Figure 5). This information is fundamental for indications of settled places, particularly the density and, as

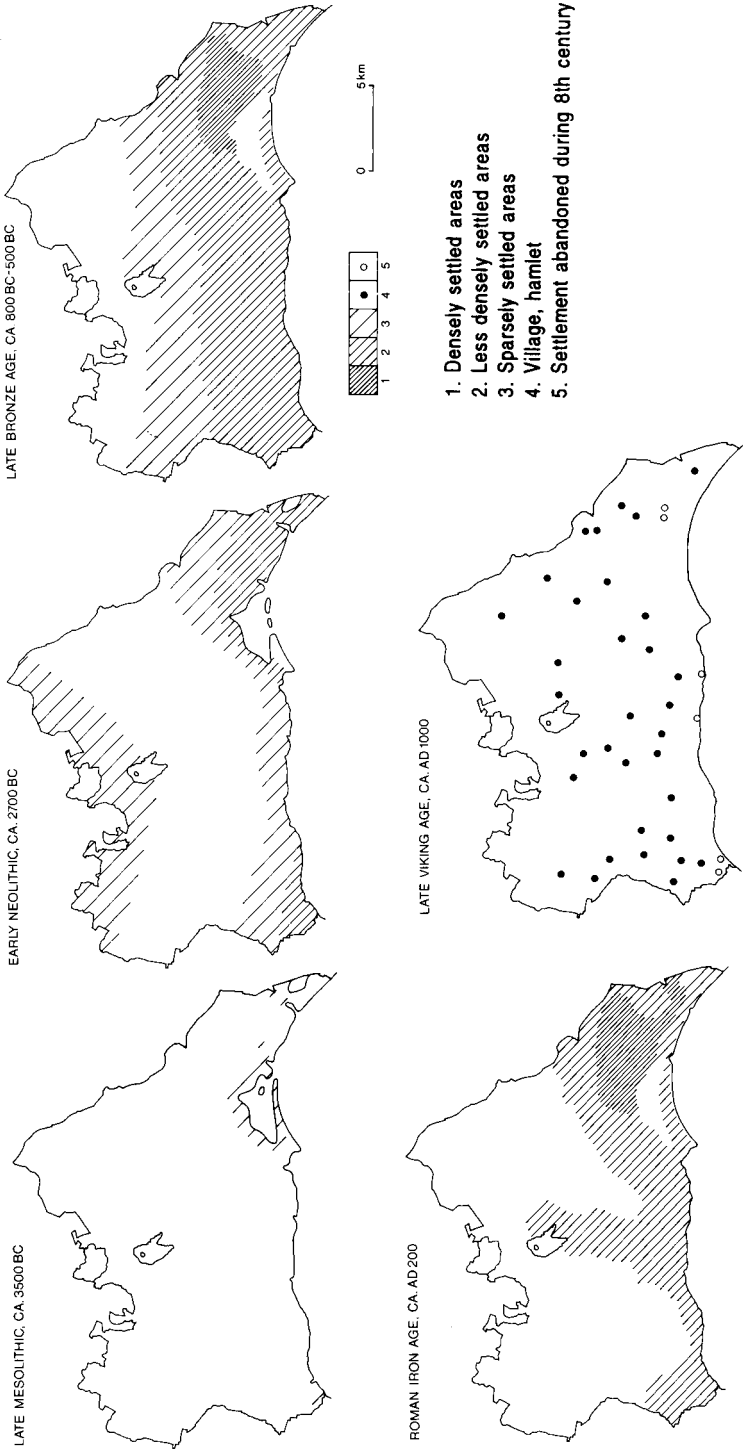


Figure 5. Settlement changes from the Mesolithic to the Early Middle Ages. These maps are intended to give a picture of the most important changes in settlement.



a consequence, the land use and vegetation differentiation in the landscape. This is a complement to the palaeoecological information which is better suited for general landscape changes through time than for precise spatial changes.

For the more detailed reconstructions of landscape and vegetation, slightly different methods have been used (Olsson in Berglund 1991). Beside relevant palaeoecological information from nearby sites, a protein-based model for human nutrition has been applied. Information on human dietary consumption was obtained from archaeological and palaeoecological evidence.

#### 4. Assumptions about vegetation dynamics with increasing human impact

The interpretations concerning the spatial distribution of vegetation types are based on several assumptions, particularly the fact that all natural, or less disturbed, vegetation is to some extent a reflection of soil fertility, topography, and hydrology. This can be applied also to conditions in the past. Another assumption is that human impact on the natural ecosystems in an agrarian economy leads to deforestation and the creation of secondary woodlands and grasslands (*cf.* Rackham 1986, Pott 1988). When subdividing the ground into two categories according to soil moisture, we recognise two main developmental trends along with increasing human impact (Table 2).

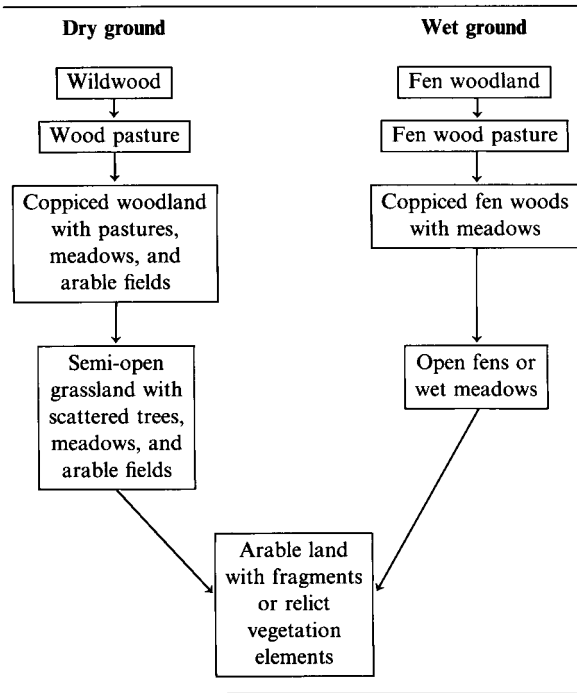
All vegetation/land-use categories mentioned here have been given certain symbols on the coloured landscape historical maps. The terminology of woodlands mainly follows Rackham (1986).

#### 5. Regional landscape reconstructions

The periods with survey landscape reconstructions can be characterised in the following way, here selectively illustrated (Figure 5; Plates 1 and 2):

*3500 BC, Late Mesolithic.* Hunting camps at the coast in the southeast, otherwise sporadic. Possibly small clearings. More or less closed wildwoods, mosaic because of wetlands and soil differentiation.

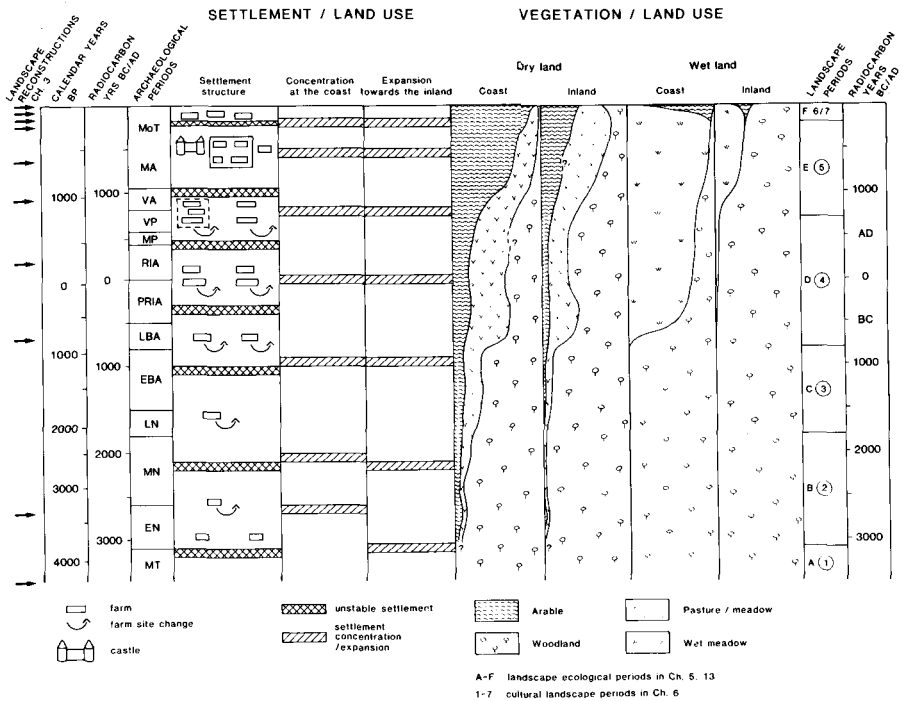
*2700 BC, Early Neolithic.* Agrarian economy introduced. Settlement mainly along the coast and sporadically in the inland area. In the settled area half-open landscape with wood pastures, coppiced woods, meadows, and arable. In the intermediate hummocky landscape more or less untouched woodlands. Later during the Neolithic and Early Bronze Age settlement concentrated on the coast.

**Table 2.** Vegetation development through time in an agrarian economy

*800 BC, Late Bronze Age.* Settlement concentrated in the coastal area, particularly in the southeast, and the outer hummocky landscape. Coastal area semi-open grassland with scattered trees, pastures, meadows, and arable fields. Outer hummocky landscape with coppiced woodland, and meadows and arable fields around settled places. Fen woodlands opened for coppicing and pastures close to settled places. Inland area with wood pastures used extensively, possibly in a transhumance system.

*AD 200, Roman Iron Age.* Settlement concentrated in the coastal area, the outermost hummocky landscape, and in a lobe towards the inland along a river-lake valley. Coastal area semi-open grassland as before. The zone with coppiced woodland in the outer hummocky landscape reduced because of settlement concentration. Vast wood pastures in the outer and inner hummocky landscape.

*AD 1000, Viking Age.* Settlement in villages at the coast as well as in the outer hummocky landscape. In the inland possibly sporadic single farms. Villages surrounded by semi-open grassland—infield/outfield pattern. Also fen woodlands exploited for coppicing, grazing, and mowing.



**Figure 6.** Synthesis of long-term landscape changes in the Ystad area during 6000 years. Settlement/land use is illustrated by symbols according to a simplified model. Changes in vegetation/land use are illustrated by approximate proportions of four main land-use categories based on pollen diagrams. Archaeological periods have been given the following abbreviations: MT=Mesolithic Time, EN=Early Neolithic, MN=Middle Neolithic, LN=Late Neolithic, EBA=Early Bronze Age, LBA=Late Bronze Age, PRIA=Pre-Roman Iron Age, RIA=Roman Iron Age, MP=Migration Period, VP=Vendel Period, VA=Viking Ages, MA=Middle Ages, MoT=Modern Times.

*14th century.* Settlement in villages as before. Now also church villages and the first estate fortresses. The town of Ystad on the coast. The inland colonised by the first single farms in the Late Middle Ages. Landscape semi-open, mosaic character with grasslands for grazing and mowing, coppiced wood stands, on dry land as well as on wet lands.

*18th century.* Settlement and landscape more or less as before, but inland woodlands also more exploited. Landscape extremely mosaic and diverse, with dry and wet pastures/meadows occupying large areas.

*1815.* Settlement and landscape as before, but woodlands and grasslands decreasing because of expanding arable land. Some villages are broken up and settlement starts to be scattered.

1915. Increased scattered settlement caused by changed village organisation. Expanding arable fields at the expense of grasslands, woods, wetlands. Former wetlands drained. Untouched woodlands (hunting woods) only at the estates.

1985. Expanding scattered settlement, and expansion of the area of the town of Ystad. Expansion of arable land at the expense of grassland, woods, wetlands. Agrarian monocultures. Plantations of coniferous trees. Still preserved "old" landscape: woods on the estates, grasslands in the inland area and in military areas.

## 6. Synthesis of the cultural landscape development

Our view of the long-term landscape changes is illustrated in the sequence of ten landscape-historical maps, and also in a time-vertical diagram (Figure 6) where settlement and vegetation changes are juxtaposed against land use. This results in the definition of seven landscape-ecological periods which are comparable for southern Scandinavia. This means that we regard the interaction between society and environment to be more dynamic and complex than assumed by the expansion/regression hypothesis. However, most of our landscape periods end with a settlement concentration leading to woodland regeneration, later followed by a new settlement expansion. We believe that, in general, landscape changes are caused by changes in society. Environmental factors such as climate and hydrology mainly have a long-term effect on the landscape. At least in prehistoric times society was flexible and adapted easily to ecological changes. For an agrarian society there seems to have been a surplus in this region of natural resources throughout the past.











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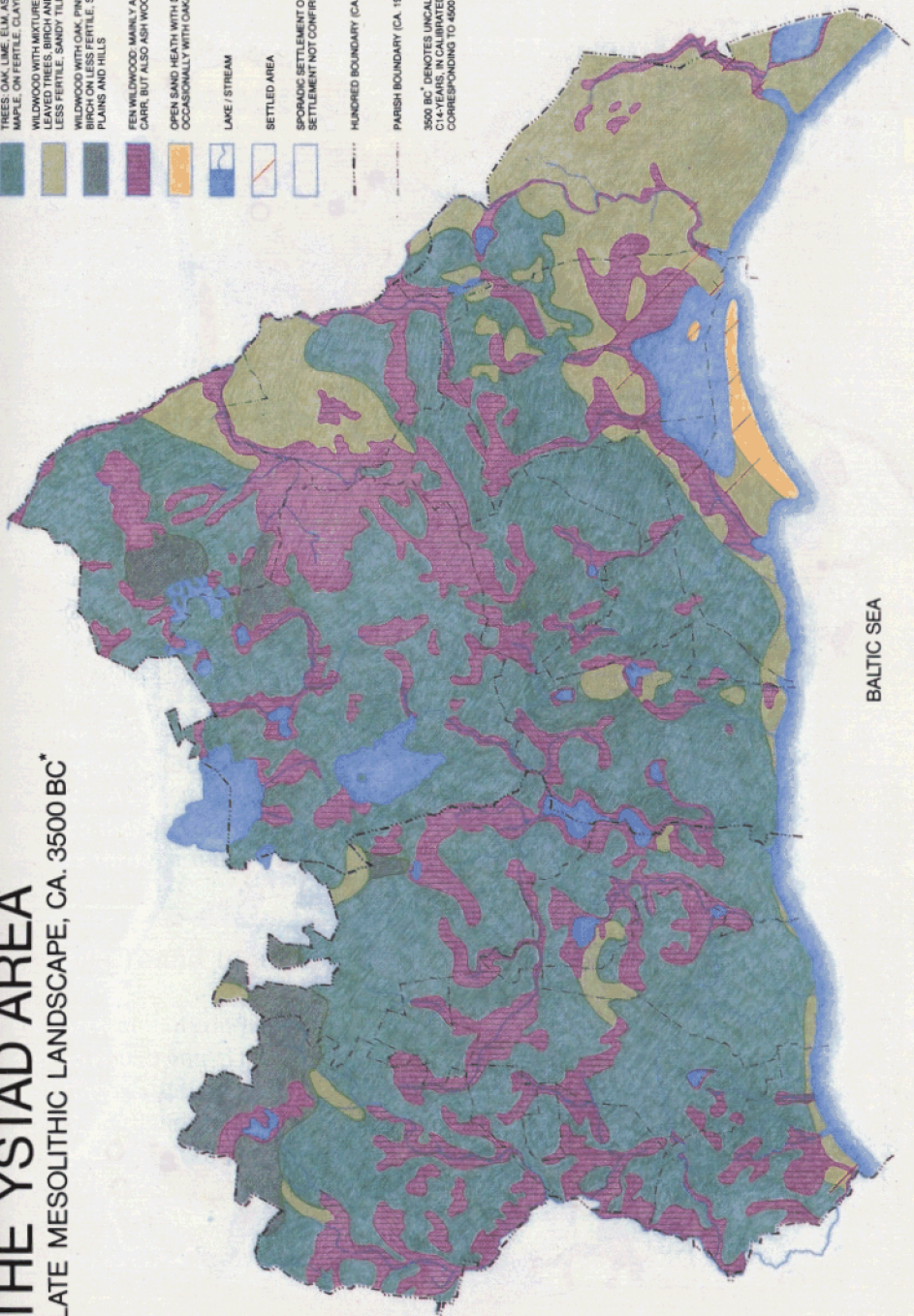
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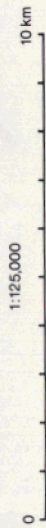
# THE YSTAD AREA

## LATE MESOLITHIC LANDSCAPE, CA. 3500 BC\*

-  WILDWOOD WITH BROAD-LEAVED TREES: OAK, LIME, ELM, ASH AND MAPLE, ON FERTILE, CLAYEY-SILT CLAYS
  -  WILDWOOD WITH MIXTURE OF BROAD-LEAVED TREES: BIRCH AND OAK ON LESS FERTILE, SANDY-FINE SILTS
  -  OPEN SAND HEATH WITH DUNES, OCCASIONALLY WITH ULM
  -  FEN WILDWOOD: MAINLY ALDER, CARR, BUT ALSO ASH WOODS
  -  OPEN SAND HEATH WITH DUNES, OCCASIONALLY WITH ULM
  -  LAKE / STREAM
  -  SETTLED AREA
  -  SPORADIC SETTLEMENT OR SETTLEMENT NOT CONFIRMED
  -  HUNDRED BOUNDARY (CA. 1960)
  -  PARISH BOUNDARY (CA. 1960)
- 3500 BC\* DENOTES UNCALIBRATED C-14 YEARS, IN CALIBRATED YEARS CORRESPONDING TO 4000 BC (cf. Ch 2.9)



BALTIC SEA



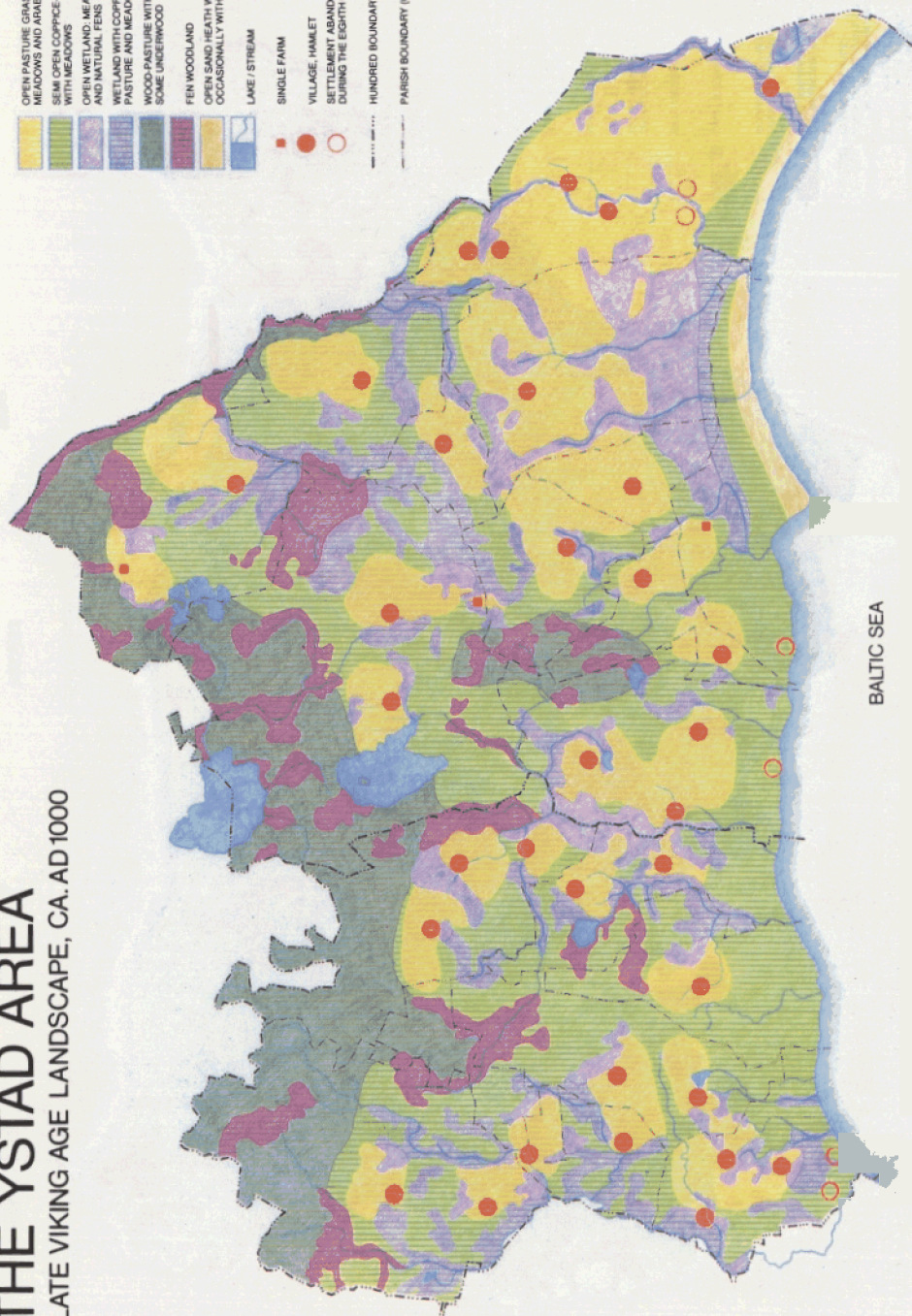
LANDSCAPE ECOLOGY: B. E. BERGLUND  
 SETTLEMENT: L. LARSSON  
 ED. & GRAPHICS: M. HEDGECOCKS



# THE YSTAD AREA

## LATE VIKING AGE LANDSCAPE, CA. AD 1000

- OPEN PASTURE GRASSLAND WITH MEADOWS AND ARABLE FIELDS
- SEMI OPEN COPPICE-PASTURE WITH MEADOWS
- OPEN WETLAND, MEADOWS AND NATURAL FENS
- WETLAND WITH COPPICE, PASTURE AND MEADOWS
- WOOD-PASTURE WITH SOME UNDERWOOD
- FEN WOODLAND
- OPEN SAND HEATH WITH DUNES, OCCASIONALLY WITH GRAPHE
- LAKE / STREAM
- SINGLE FARM
- VILLAGE, HAMLET
- SETTLEMENT ABANDONED DURING THE EIGHTH CENTURY
- HUNDRED BOUNDARY (CA. 1060)
- PARISH BOUNDARY (CA. 1960)



0 10 km

1:125,000

BALTIC SEA