

Forest Stands During the Subboreal Period in South Bohemia at the Confluence of the Rivers Lužnice and Vltava (Moldau)

JIŘINA SLAVÍKOVÁ

In recent years extensive archeological investigation of a settlement from the Early Bronze Age (1600 B. C.) has been conducted in South Bohemia at the confluence of the rivers Lužnice and Vltava (Nový Dvůr, community Hosty, district České Budějovice). In the excavations also remains of carbonized wood were found. They are dated analogically with the other archeological findings.

Method

The carbonized wood specimens were determined according to their anatomical structure. Fresh fracture surface of the charcoals was observed in microscope in reflected light at three basic directions, viz.: transversal, radial and tangential. The prevailing majority of wood specimens were determined only to the genus level, as for species determination there usually fail enough reliable diagnostic characters. For the determination the keys by Schmidt 1941 and Greguss 1954, 1972 were used. Altogether 126 charcoals pieces and 23 findings probes were determined.

From quantitative point of view the determined wood species were expressed by the number of pieces determined as well as by their frequency in the individual archeological findings probes. The frequency is expressed in per cents, in how many probes of the total number of findings probes wood species charcoal was found (see also Slavíková 1960). Quantitative expression of frequencies was used because most carbonized wood specimens break easily thus disproportionally increasing the number of charcoals which consequently cannot be adequate to their presence in the locality.

The complex of the wood species found can also be influenced by intentional wood selection by man (in the first place building wood) or by wood importation from a greater distance.

The above facts imply that the results of charcoal analysis cannot be an analogy of phytocenological records (i. e. from neither the qualitative nor quantitative aspect a description of the stand composition) stating only that the wood species determined had most probably grown in definite dated time in close vicinity of the archeological locality.

RESULTS AND DISCUSSION

A list of the wood species from the individual finding probes is given in Tab. 1. Their quantitative representation is expressed according to the number of pieces as well as according to the frequency of all finding probes.

Tab. 1

	No. of pieces	Frequency %
<i>Abies alba</i> (fir)	70	65.2
<i>Pinus sylvestris</i> (pine)	18	17.3
<i>Fagus sylvatica</i> (beech)	14	17.3
<i>Taxus baccata</i> (yew)	14	8.6
<i>Betula</i> sp. (birch)	7	4.3
<i>Quercus</i> sp. (oak)	2	8.6
<i>Sorbus</i> sp. (rowan)	1	4.3

Beech, fir and yew form an ecologically related group in the wood species complex. The above mentioned wood species were probably forest dominants on steep slopes above the Vltava river where they formed beech — fir stands. They probably covered the lower, more humid part of the slopes, predominantly exposed to the north and east.

The oak charcoals seem to be remains of oak woods growing on the upper part of these slopes or on the rocky basis or also on the slopes exposed to the west and southwest.

The pine charcoals found with 17 per cent frequency come from pine stands growing in the first place on insolated rocks or also on inundation fluvial sand deposits in the valley. The birch and rowan accompanied these stands on open and insolated stands.

The beech and fir charcoals appear also in other archeological localities in the river basin of the central part of the Vltava flow: thus, they were found e. g. in the excavations of a Celtic oppidum near Hrazany (100 B. C.) (Slavíková 1960), Zvírotice (800 B. C.) (Slavíková 1950), and from a German settlement near Zalužany (B. C. — A. D. transition period) (Slavíková 1978) supporting there the reconstruction of the beech — fir stand. The time extent of the archeological findings from the above localities is quite considerable reaching from the Early Subboreal (Hosty 1600 B. C.) to the end of Subatlantic (Zalužany 0—1st cent. A. D.).

Although various climatic alterations must be assumed in the period from the Subatlantic to the present time, the wood species finding demonstrate that the main forest stand dominants and subdominants (beech, fir and yew on one hand, oak, pine on the other) have persisted there until the recent times.

Comparison of the wood species found and the stands reconstructed by them with present state demonstrates namely that the composition of the recent original stands growing in the Vltava valley agrees with them in the basic dominant wood species. On shady slopes, in the first place in their more humid lower parts there also appeared the beech — fir stands with prevailing fir in the recent time (this nevertheless refers to the state before filling of the Orlick water reser-

voir) forming communities of the *Fagion* alliance. On the sunny slopes and in the upper parts of the slopes oak — hornbeam forests grew (from the *Carpinion betuli* alliance) or scree and gorge deciduous forests of the *Tilio — Acerion* alliance. Pine woods were scattered on the rocks. Phytocenological records and detailed descriptions of recent stands from the central part of the Vltava flow are reported e. g. by Blažková 1964.

From the ecological point of view the finding of yew tree charcoals is very interesting. Yew was also found in the charcoal material from the excavation of the Celtic oppidum near Hrazany. It grew probably admixed in the beech — fir stands with which it formed the *Taxo — Fagetum* community, or in the scree forest belonging to the *Tilio — Acerion* alliance. At present time yew does not grow any more either near Hrazany or at the confluence of the rivers Lužnice and Vltava, although it is occasionally found in the central parts of the Vltava flow, e. g. on the Drbákova rock, near Štěchovice. Both yew localities determined according to the carbonized wood remains represent therefore another, nowadays already extinct yew tree locality in the central part of the Vltava flow from the aspect of time, pointing at the origin of recent yew tree localities in the Vltava river basin at least until the Subatlantic Period.

SUMMARY

On the basis of the determined carbonized wood specimens from archeological findings on the confluence of the Vltava and Lužnice rivers (settlements from 1600 B. C. near the Hosty community, district České Budějovice) reconstruction of forest stands from the Subboreal Period was suggested. The ecologically different wood species groups demonstrate that at that time distinct ecological differentiation of the stands, analogical to the present one, was formed. The shady slopes were probably covered with moist beech — fir forests, on the sunny slopes oak forest with pine grew or scree forests with oak. On rocky soil pine woods prevailed. This reconstructions of the forest from the Subboreal Period agrees — as for its basic forest dominants — with the present stands growing in the central part of the Vltava flow. The finding of yew in this nowadays extinct locality leads to the presumption that yew tree probably occurred in the original forest on the Vltava slopes more frequently than nowadays and that the origin of the yew tree localities in the central Vltava area reached at least to the Subboreal Period.

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RNDr. Jiřina Slavíková, CSc.

Katedra botaniky PŘF UK

Benátská 2

Praha 2

CS 128 01