**T3C3**

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The T3CA span the Holocene and we present here the pollen analysis made between 1325 and 700 cm, during the end of the late glacial and the first part of the Holocene.

One cubic centimetre of sediment was sampled every 4 cm along the T3C3 peat core. Samples were prepared for pollen and non-pollen palynomorph (NPP) analysis using standard techniques, including treatment with NaOH, HF, and acetolysis (Moore et al., 1991). The entire residue obtained after preparation was read under a microscope. Pollen and spores were identified using Reille (1992), Beug (2004), and Chrono-Environnement lab. reference material. A minimum of 400 pollen grains of terrestrial plants was counted in each sample to ensure statistical significance. The NPPs were identified following van Geel et al. (2003), van Geel and Aptroot (2006), and Cugny et al. (2010). The percentages used for the pollen diagram were calculated on the basis of the sum of total terrestrial pollen (AP+NAP=100%), excluding Cyperaceae, hygrophilous and aquatic pollen taxa, spores, and NPP. The pollen diagram was drawn using TILIA and TGView software (Grimm, 2011). Pollen zones were delimited with CONISS (Grimm, 1987).

The T3C3 core was divided into three phases based on pollen data: T1 [13000 − 11200 BP], T2 [11200 - 9000 BP] and T3 [9000 8200 BP].

LPAZ T1. Pollen analysis reveal an open environment with a mixed forest compost of Pinus, Picea, Betula and, at a lesser extent, Salix and Juniperus. Among herbaceous plant, Poaceae, Artemisia and Chenopodiaceae have the most important values. The diversity of algae suggests the presence of a pond preceding the peat deposit. Three subphases can be evidenced in this phase. In T1a, from ca. 13000 to 12700 BP are recorded high values of Pinus and a great diversity of herbs. A peak of coprophilous fungal spore occurs at ca. XXXX BP. Sporormiella, Sordariacea, Delitschia, Gelasinospora and Neurospora suddenly reach values superior to 5%. This could be related to the presence of herbivores and potentially fire events in the surrounding.

In T1b, from ca. 12700 to 12000 BP, Pinus decrease and Betula and Picea become the main arboreal taxa. Among herbaceous plant, Artemisia reach its highest values. Coprophilous fungal spores regularly occur in small quantitiy. In T1c, from 12000 to 11300 BP, Picea increase and Pinus peaks at the end of the zone. Betula is the dominant taxa. The herbs, in particular Artemisia and Poaceae, suddenly decrease at the end of the zone.

LPAZ T2: This zone is dominated by Betula and Pinus, with Ulmus appearing discreetly as well as Tilia at the end of the zone. Corylus, Quercus and Alnus have weak values. Herbaceous species remain around 5%; Artemisia has almost totally disappeared.

In T2a, from 11300 to 10400 BP, Betula is very dominant, reaching 60 to 70% of the total pollen count. In these birch forests, pines are also present. Indeed, after the peak marking the boundary between T1 and T2, pine decreases in the first half of T2a and increases in the second half of this sub-zone. Ulmus appears in 2a, as do some isolated occurrences of Alnus, Corylus and Quercus. Herbaceous plants are very sparse. Some levels show rare spores of coprophilous fungi.

In T2b, from 10400 to 9500 BP, Betula, which is constantly decreasing, and Pinus, which is increasing, constitute the majority of the forest cover, into which Ulmus is regularly introduced, followed by Tilia at the end of the sub-zone. Alnus, Corylus and Quercus are still very discreet. Among the herbaceous species, a slight increase in Artemisia should be noted. The spores of coprophilous fungi have completely disappeared.

In T2c, from 9500 to 9000 BP, the situation doesn’t change, except for the constant presence of Tilia, and occurences of Corylus and Quercus. Herbaceous species reach their minimum level.

LPAZ T3: the birch forest is still present but the more mesothermophilous taxa, such as Ulmus, Tilia, Alnus, Corylus and Quercus, are now well represented. Herbaceous plants are more present, notably thanks to the increase in Poaceae and Cyperaceae. The spores of coprophilous fungi, still very discreet, are regularly observed.

In T3a, from 9000 to 8500 BP, the levels of Pinus and Betula decrease regularly, while Ulmus, Tilia, Alnus, and more discreetly Corylus and Quercus become established. Herbaceous plants have increased, especially Poaceae, Cyperaceae and Filipendula; wet meadows should punctuate the still very present forest space. Spores of coprophilous fungi irregularly occur.

In T3b, from 8500 to the top of the diagram, i.e. around 8200 BP, the phenomena initiated earlier become more pronounced: a regular decline in Pinus and Betula and a more obvious installation of mesothermophilous trees, in particular Corylus and Quercus, although they do not exceed 5%. Herbaceous plants oscillate between 5 and 10%; the presence of some wet meadows is confirmed. Very sporadically, spores of coprophilous fungi are still found in some levels.