Could the Pleistocene history of Taxus baccata explain its present distribution? By PasDETabac working group.

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Abstract

Taxus baccata (yew) is the unique member of the Taxaceae family in Europe where it covers a large area from Mediterranean mountains to south Scandinavia. But generally it plays a secondary role in forest ecosystems where dominant trees are oaks, beech or fir. The examples of dense yew populations are very rare.

Yew is dioic, an exceptional case among conifers. Its fruit, soft and red, is also quite original and its attractiveness for birds contributes to the seeds dispersal. Contrary to eatable fruit, wood and leafs contain a toxic alkaloid "taxin" well known nowadays as an inhibitor of cancer cells expansion. The wood is strong and rot-proof. Even if Taxus baccata is an ornamental tree, its natural distribution is patchy and most of the experts consider it as an endangered species.

We propose an exploration of its Pleistocene and Holocene history for a better evaluation of its niche. Thid tree appears sporadically during the late Pliocene and Early Pleistocene, but after the Mid Pleistocene revolution Marked by the transition from 40 ky glacial-interglacial cycles to 100 Ky cycles) Taxus stars to know short phases of expansion during some interglacial episodes, notably during MIS 11, 9 and 5. It is quasi absent during MIS 13 and 7 and during the Holocene cannot expand except in rare places such as northwest Alps, French Jura and western Ireland.

Keywords: Palaeoecology, yiew, interglacial, biogeography

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