

## Pollen analytical study on the early use of a present-day trail in the Central Alps

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**ABSTRACT** - Summer-farm and lowland pollen from terrestrial sediments along the Lago Grande-Baldiscio Pass trail (between the upper Spluga Valley, Northern Italy, and the Val Mesolcina, Southern Switzerland) can be interpreted as a result of epi- and endozoochoric transport by domestic animals. Combined with lake-sediment palynology and written historical documents, this supports a reconstruction that the pass route has been in use for more than 3000 years (C14), beginning in the Later Bronze Age.

**KEY WORDS:** Palynology, Epi- and endozoochory, High-altitude circulation, Bronze Age, Central Alps

**PAROLE CHIAVE:** Palinologia, Epi- e endozoocoro, Circolazione ad alte quote, Età del Bronzo, Alpi centrali

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### 1. INTRODUCTION AND STUDY AREA

During the historical times, numerous known paths, trails and muletracks have been used in ground communications between inhabited areas all over the Alps, while an unknown number of other trackways have been forgotten. The introduction of domestic animals and a need for additional pasture increased the importance of pathways for daily and seasonal transfer. Although pre-historic artefacts are rare along pathways, the early traffic may be traced by local vegetation disturbance, as well as the peculiar presence of pollen of low-altitude plants as a result of epi- and endozooic transport by domestic animals (epi/endozoochory). On the basis of non-local or "exotic" pollen, palynology has been able to show that some current trails had a longer history than expected (e.g. MOE *et al.*, 1988; MOE & VAN DER KNAAP, 1990).

Epi- and endozooic transport of pollen, seed and other particles of fodder plants from low to

high-altitude levels is easily seen today where transhumance tracks used by flocks cross patches of snow (e.g. ZIPPERLE *et al.*, 1994, photo p. 61). The digestion turnover is estimated to take from 1-3 days, but pollen originating from lowland plants is being redeposited all along the route. The amount of dispersed exotic pollen seems to be more dependent on the number of animals coming or passing than on the length of time the animals have stayed. In addition, minerogenic dust dispersion from pathway erosion can take place depending on the density of traffic.

To further the palynological detection of earlier use of historically known high-altitude passes, a present-day tourist path across the Baldiscio Pass was studied (Fig. 1). This pass, 2353m a.s.l., is part of a saddle connecting the Mesolcina (Graubünden, CH) and Febbraro Valleys, the latter a side branch of the upper Spluga Valley (Lombardy, I). The saddle includes a large natural lake, Lago Grande (2300m), which the traditional path follows North and West. While palynology of the Lago Grande sediments was studied by L. Wick at

Bern University (FEDELE *et al.*, 1989:60-62; WICK, 1994), we focus in this paper on the pollen-analytical study of a sample of terrestrial material especially collected near the path west of the lake. These investigations were part of an archaeological and paleoecological research project centred on the Spluga Valley of alpine Northern Italy (FEDELE, 1992, 1998; FEDELE & BUZZETTI, 1993; FEDELE & WICK, 1996).

The main pathway links Isola (I) and Mesocco (CH) going westward into the Val Febbraro up to the summer farm clusters of Borghetto, approx. 1895-1995m. a.s.l., and then to Lago Grande. A side branch often used by shepherds follows up a overhanging furrow above Borghetto, Val Vidröla (FEDELE, 1998), and another possible route reaches the pass area from a neighbouring plateau to the South, Pian dei Cavalli. The several paths join round the lake and then proceed to cross the Baldiscio watershed as a single trail, down to Alp de Balnisc' and the Mesolcina Valley above Mesocco.

## 2. METHODS AND RESULTS

### 2.1. Archaeobotany

The sampling site or "Lago Grande West", located 25m from the lake shore near a tributary stream, may have represented for humans and animals a last (or first) resting place east of the Baldiscio Pass. Pollen analysis was made on a 34cm-long terrestrial core taken with a hard plastic tube in July 1992; two C14 datings were provided by the NRC Radiocarbon Laboratory in Trondheim, Norway (Fig. 2). Lago Grande is surrounded by wet marshes and drier areas. The heavily grazed vegetation close to the site is dominated by different *Carex* species, *Poa vivipara*, *Sibbaldia procumbens*, *Deschampsia caespitosa* and some *Nardus stricta*; on drier ground small stands of dwarf *Salix*, *Juncus trifidus*, *Polygonum viviparum*, *Vaccinium myrtillus*, *Ranunculus*, *Luzula* and *Euphrasia* occur.

Four pollen assemblage zones were recognized in the diagram (LPZ1-4). The earliest phase is estimated to date from c.3500/3000 BP, synchronous with the Sub-Boreal and thus with the Later Bronze Age. Except for zone 3 (a phase of reduced pasturing and the occurrence of alder stands, to be equated with the Roman Age), a completely tree- and shrubless landscape throughout the timespan of the core can be inferred. High charcoal values

in zones 1, 2 and 4, combined with non-local pollen of anthropogenic origin (e.g. *Plantago lanceolata*, *Urtica dioica*, *Chenopodium cf. bonus-henricus*, and *Cerealia*) and an increase of fern spores attest to the local deposition of exotic material dependent on human activity.

Such conclusion is strengthened by a comparison with the Lago Grande lake-sediment curve (L. Wick in: FEDELE *et al.*, 1989; as contrasted with other lake curves in the area, see FEDELE & WICK, 1996) and a peatbog curve from Val Vidröla (MOI & HJELLE, in press), where the types and percentage of anthropogenic particles imply a different and additional influx from lower altitudes instead of air transport. Various amounts of summer-farm and lowland pollen dating from approx. 3000 BP significantly occur in both our diagram and Lago Grande, definitely indicating a use of the path as far back as the Recent or Final Bronze Age (cfr. FEDELE, 1998; BO1 site at Borghetto, 3010±85 BP, and DELLA CASA, 1997, for the archaeological background). Similarly, in Val Vidröla, high *Urtica* and *Plantago* values since 3800 and 2500 BP, respectively, need to be interpreted as a result of continuous supply of pollen from below, possibly linked to an early use of the alternative "shepherd path" mentioned above.

### 2.2. Historical records

Portions of ancient roads or tracks from the Roman period onwards in the upper and central Spluga Valley were mapped by A. & T. PLANTA (1990), who also suggested locations for possible "prähistorische-römisch" roads between the Splügen and Isola. But apart from their presumed chronology, none of these "main" roads used the Baldiscio Pass.

Historical documents are rather scanty or uninformative for the upper Spluga Valley, the available information still depending on a small number of scattered and poorly referenced records, mostly summarised in two local histories long ago (CROLLALANZA, 1898; BUZZETTI, 1909; see BALATTI & SCARAMELLINI, 1995, for a recent account of historical tracks in the valley). However, some of the known documents support and expand the palynological findings. In June 1203, one of the earliest dated documents, an official agreement between Chiavenna and Mesocco on the utilisation of mountain pastures, records that the Baldiscio area was traditionally grazed by animals from Mesolcina. More explicitly, the Baldiscio Pass turns out to have been the preferred route for local Alpine crossings during the 13th-15th centuries, when communica-

tions between the Spluga Valley and Nufenen in the upper Rheinwald gained political and economic importance.

The villagers of Mesocco and Isola (Fig. 1) used to have regular contacts and frequent litigations about summer pastures down into the 17th century, as recorded in notarial and other transactions for a series of years between 1265 and 1652. Meetings and clashes frequently occurred not only in the summer but during the winter, clearly suggesting that the Baldiscio Pass remained open or

somehow practicable in the winter season. Moreover, a document of 1472 explicitly states that the Baldiscio muletrack was used for mule and horse pack-transport, as well as horseback journey, apparently on a regular basis (cfr. BALATTI, 1995). Together, this information and the palynological findings show that the Baldiscio remained locally pre-eminent throughout the Middle Ages, within a framework of intervalley mobility and summer pasture exploitation which had been already established during the later prehistory.

**SUMMARY** - Summer-farm and lowland pollen from terrestrial sediments along the Lago Grande-Baldiscio Pass trail (between the upper Spluga Valley, Northern Italy, and the Val Mesolcina, Southern Switzerland) can be interpreted as a result of epi- and endozoochoric transport by domestic animals. Combined with lake-sediment palynology and written historical documents, this supports a reconstruction that the pass route has been in use for more than 3000 years (C14), beginning in the Later Bronze Age.

**RIASSUNTO** - Polline di malga e di bassa quota da sedimenti terrestri lungo il sentiero di lago Grande e passo Baldiscio (tra Italia e Svizzera, Alpi Centrali) rimanda a trasporto epi- ed endozoocoro da parte di animali domestici. Comparati con dati palinologici da sedimenti lacustri e con informazioni documentali degli scorsi secoli, questi dati permettono di ricostruire che il percorso del Baldiscio è stato in uso per oltre 3000 anni (C14), a iniziare dall'avanzata Età del Bronzo.

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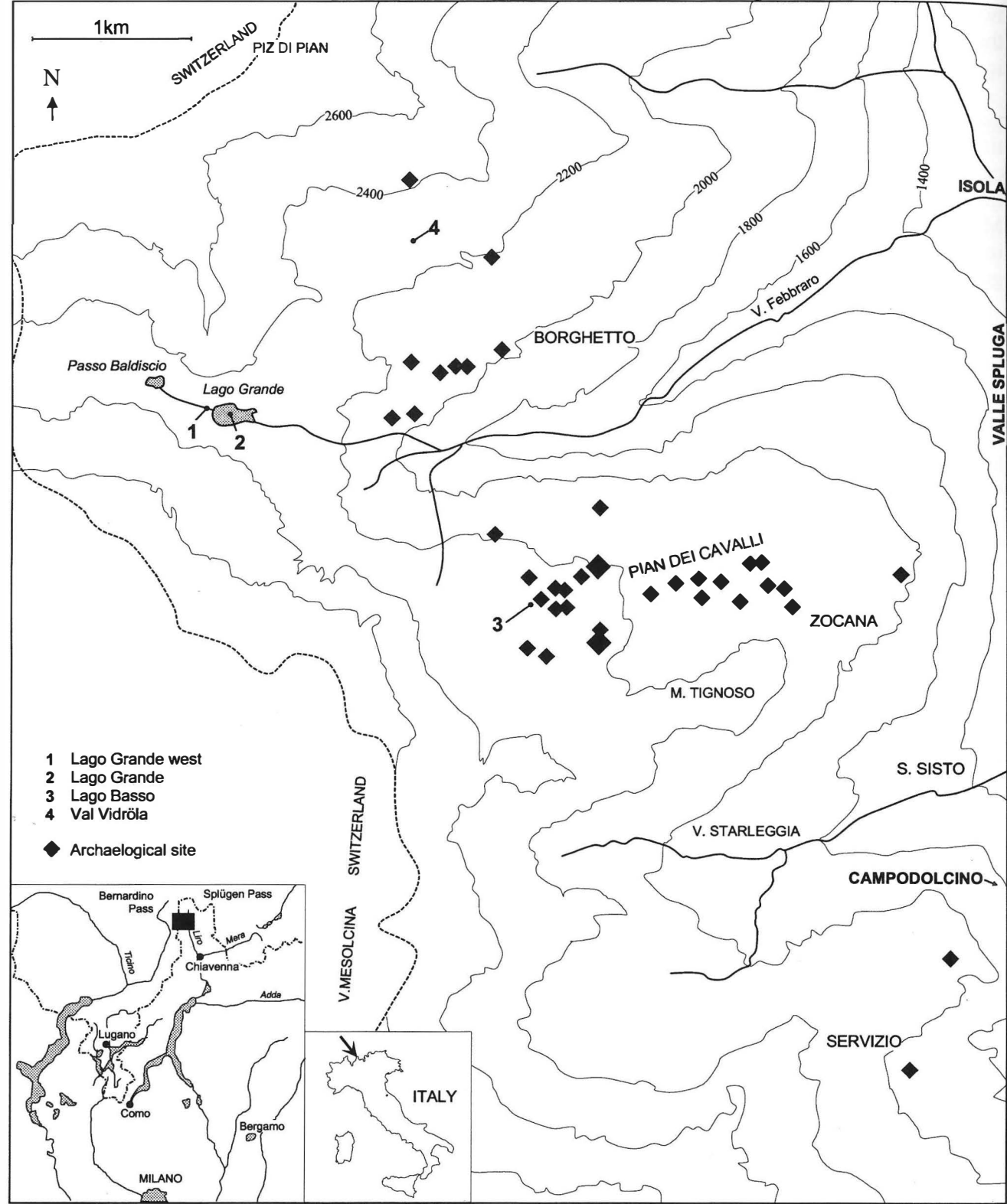


Fig. 1 - Upper Spluga Valley, Italian Central Alps: map of the study area with archaeobotanic and prehistoric sites (D. Moe; archaeological data after FEDELE, 1998).

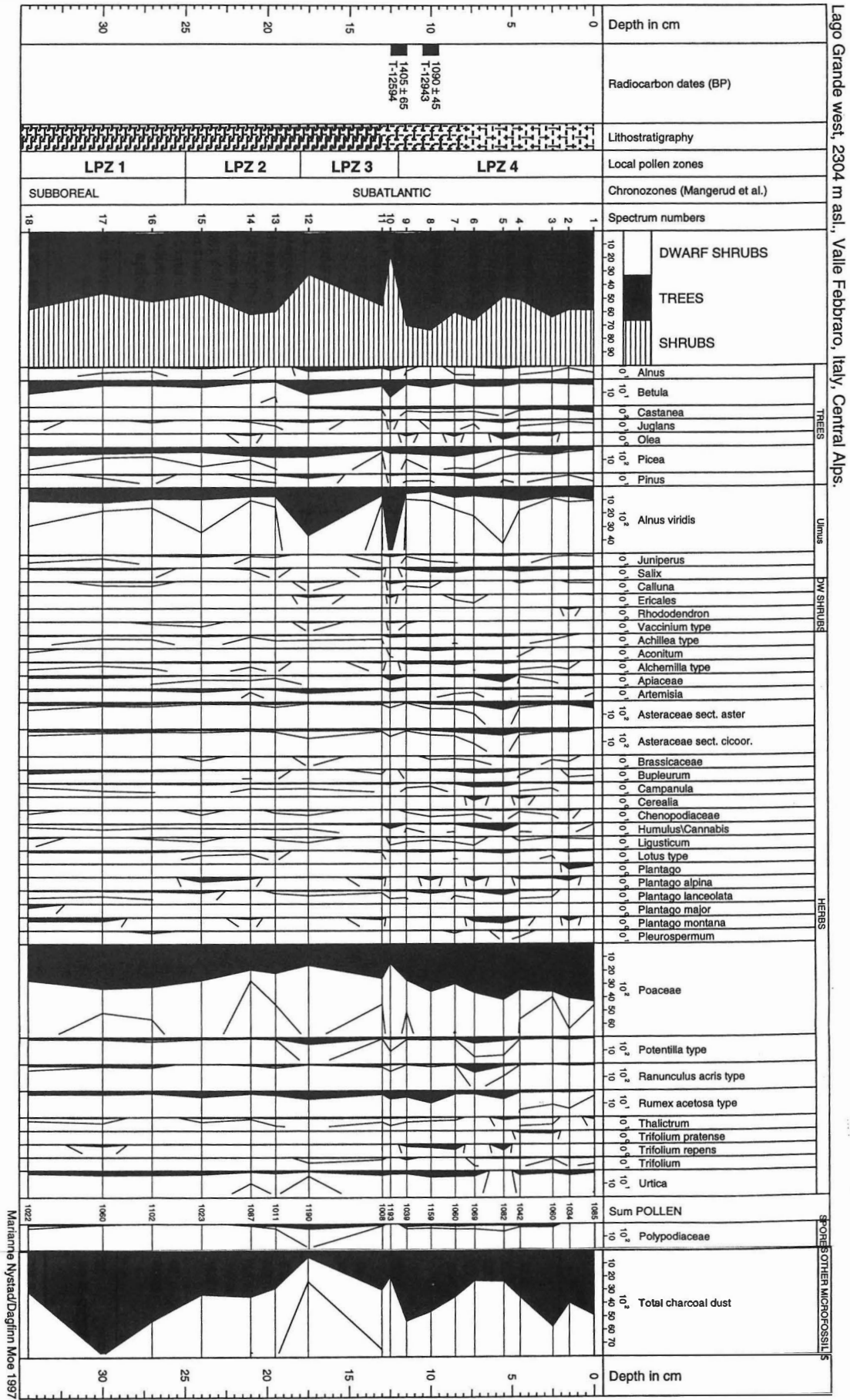


Fig. 2 - Simplified influx pollen diagram from the "Lago Grande West" sampling site, 2304m a.s.l. (NYSTAD & MOE, 1997). The C14 dates calibrate as follows: 1090±45 BP= cal. AD 935-1000; 1405±65 BP= cal. AD 605-680.