

### The Ladinian flora from the Cassina beds (Meride Limestone, Monte San Giorgio, Switzerland): preliminary results

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The Monte San Giorgio (UNESCO World Heritage List, Canton Ticino, Southern Alps) is famous for its rich fauna of Middle Triassic marine vertebrates, collected since the mid-19th century. In addition to the marine (and terrestrial) reptiles and fishes the locality yielded a highly diverse invertebrate fauna composed of ammonoids, bivalves, gastropods, echinoderms, foraminifers and arthropods, as well as algae, land plants, and abundant palynomorphs. Despite the occurrence of fossils throughout the entire section ranging from the upper Anisian to the upper Ladinian, the land plant remains were not studied in detail since the second half of the 19th century.

A newly opened excavation in the Cassina beds (in 2006) of the Lower Meride Limestone has yielded a small collection of Ladinian plant fossils (about 60 specimens). The flora contains at least five species of conifer remains assignable to the genera *Elatocladus*, *Voltzia* and *?Pelourdea*, including the new species *Elatocladus cassinae*. Co-occurring with the conifers are seed ferns (*Ptilozamites sandbergeri*) and a few leaf fragments belonging to *Taeniopteris*-like cycads and sphenophytes (*?Neocalamites*).

The patchy distribution of plant remains within the sediment mirrors a pulsating input from an elevated area (terrestrial area or islands) covered with vegetation. The exact paleogeographic location of this elevated area remains unknown. Some authors have suggested that these areas were close nearby based on the

completeness of terrestrial reptile skeletons, but the co-occurrence of the latter with the plant remains described here cannot be checked, due to the lack of detailed field data from the previous excavations. Unlike the marine vertebrate fossils from the Cassina beds, usually complete, articulated (or, if partially disarticulated, with dispersed body parts near the rest of the skeleton) and excellently preserved, the plant remains are ill preserved and severely fragmented. Unlike the vertebrates, which reached the sea bottom as complete carcasses soon after death, and thus underwent decomposition on the seafloor, the plants probably became deposited on the seafloor in an already advanced state of decay. The floral composition shows a dominance of conifers (*Elatocladus*, *Voltzia* and *?Pelourdea*), followed by pteridosperms with thick cuticles (*Ptilozamites*). Thick cuticles may be indicative of an arid place of growth, but in this case may rather be a result of the selection of taxa with thick and resistant cuticles during an extended pre-depositional transport. As a consequence, the preservation patterns (size, fragmentation, floral composition) of the plant fossils may suggest a relatively distant place of growth. If this interpretation is accurate, the plants may have grown on rather far-away islands belonging to the platform system surrounding the basin, or along the elevated southwestern border of the Meride Limestone basin.

### New reproductive structures of angiosperms from the Late Cretaceous of the Czech Republic

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New reproductive structures are described from the Peruc Korycany Formation (Cenomanian) of Czech Republic. They come from localities Brník, Pecínov and Prague, Hloubětín - Hutě.

Reproductive structures are derived from plants from basal and extinct lineages of angiosperms. Fruits *Bohemiacarpus* associated with anthers *Bohemistemon* and leafy axes *Pseudoasterophyllites*. The unilocular fruits of *Bohemiacarpus* are very elongated containing thin-walled elongate seeds. The stamens *Bohemistemon* are massive dithecate, tetrasporangiate with a small triangular apical expansion of the connective. Anther dehiscence is by longitudinal slits. Pollen grains found in situ are of *Tucanopollis* type sulcate, oblate to spheroidal, in polar view elliptic to circular, 18 - 24 µm in diameter.

Reproductive structures *Zlatkocarpus* are represented by two species *Zlatkocarpus brnikianus* and *Z. pragensis*. *Zlatkocarpus*

has a compound inflorescence consisting of primary axes bearing semi-decussately arranged spikes. Each spike has helically arranged unilocular fruits. Each fruit apparently contains a single, orthotropous seed. The stigma is indistinct and sessile at the apex. The fruit wall has distinct globular protrusions (probable resin bodies). The fruits are supported at the base by a small floral cup and a bract. Pollen grains adhering to stigmatic areas and also on other surfaces of the fossil are monocolpate with a long colpus and an open reticulum. The pollen is similar to dispersed pollen broadly referred to the extinct pollen genus *Retimonocolpites*.

Isolated stamen bearing pollen comparable to dispersed *Monocolpopollenites* is described from the locality Brník. It closely resembles unnamed pollen type described by Friis et al. 1999 from the Early Cretaceous of Portugal.