

Submitted Abstract

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>> SYNTHESIZE MOUNTAINS OF KNOWLEDGE <<

Abstract

Rapid melting of glaciers caused by increasing global temperature is dramatically changing the way we see and experience alpine environments. Barren terrains take the place of former thick ice covers, woody vegetation settles at unprecedented altitudes and remnants of past lives and events come to light. High-altitude areas in the Italian Alps hosted violent battles during the so-called "White War", i.e. the World War I fighting in cold and harsh alpine terrains. Perfectly preserved remains of those events and of their actors frequently appear above 2000 m, as a consequence of ice melting; soldiers' personal belongings and weapons tell us the flow of life and war in hostile environments.

The barrack on Mount Scorzuzzo (3095 m asl) was carved into the rock by Austro-Hungarian soldiers. The site was inhabited from June 1915 to November 1918, when Italians took over the site abandoned by the enemy troops. The barrack entrance was freed from ice in 2015, allowing the first people to enter after almost a century. All the materials retrieved will be the core of the exhibition in a new Museum to be opened in Bormio in 2022.

As part of a research and dissemination project on the historical and military events on the Alpine Front between 1914-1918, we analyzed micro- and macrobotanical remains preserved in ice inside the Scorzuzzo barrack. We collected discrete ice samples from local domestic habitats (the shelter floor, the table used to eat meals, mattresses, a fur) and a 1 meter-high ice column, considered as the stratigraphical archive of the shelter. Coupled palynological and macrobotanical analysis explore biodiversity preserved in ice and use it as a proxy for processes of accumulation of organic and mineral particles. Most of the plant material found in the shelter was deliberately brought for every-day use and has no relationship with alpine vegetation. Cereal stems were used to stuff mattresses and pillows, where abundant pollen was also found. Many samples revealed the presence of eelgrass (*Zostera marina*), posing specific questions on the supply chain of the Austro-Hungarian army. Pollen from woody vegetation is abundant in the fur, which acted like a trap of microscopic particles across altitudinal vegetation belts. Pollen also comes from snow and ice melting, with water percolating inside the shelter. Botanical data will be later on compared with the results of DNA and entomological analysis, for a better understanding of dispersal and accumulation processes.