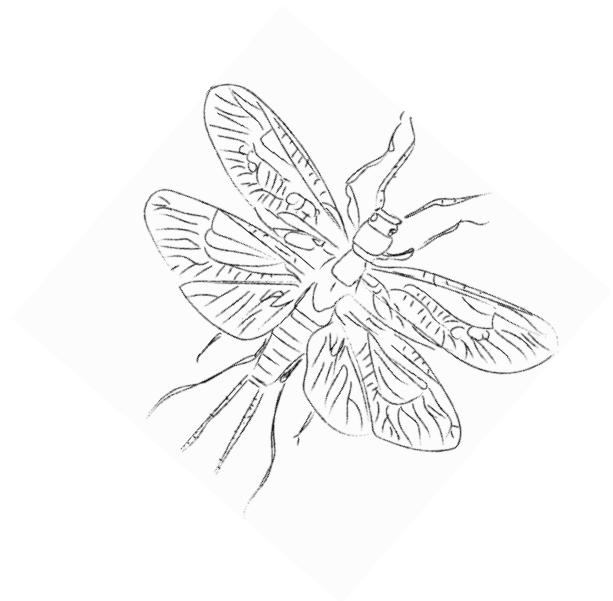




# ABSTRACT BOOK



## RS2\_O3\_Structural and functional responses of macroinvertebrate communities to climate change in five Alpine streams fed by shrinking glaciers

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The general aim of this work was to highlight as glacial influence affects structure and functional features of macroinvertebrate communities in six streams fed by glaciers with different size and shrinking rates, in three mountain groups (Italian Alps). The nine selected sites were suitable to this aim, as they were characterized by different glacial influence (measured also using as hydrochemical tracers the stable isotopes of water <sup>2</sup>H and <sup>18</sup>O in combination with conductivity), within 2 km downstream of the snouts, spanning six kryal, two glacio-rhithral, one glacial pond. In all, more than 15,000 macroinvertebrates were collected in summer 2018, of which 82% chironomids. The predictable longitudinal pattern of taxa richness and functional diversity (evaluated also as rate of organic matter breakdown) was observed in streams where, in the kryal, temperature was <5-6°C. Here a simplified food web persisted, with the grazer *Diamesa* spp. as dominant taxon. Food webs with more trophic levels and higher functional redundancy occurred in kryal sites that had lost their harsh environmental features and in glacio-rhithral sites. Species distribution was analysed in relation to food availability, estimated as epilithic Chlorophyll *a* and BPOM separated from over 60 benthic samples. The relative importance of allochthonous and autochthonous food resources was quantified using stable carbon (<sup>13</sup>C) and nitrogen (<sup>15</sup>N) isotopes, highlighting the importance of drifting organic matter for kryal species. Shrinking glaciers are resulting in upstream migration of a) specialist species tracking retreating glaciers until they disappear and b) generalist species to sites once exclusive for kryal species.

