



Tiberti R.. 2011. Morphology and ecology of *Daphnia middendorffiana*, Fisher 1851 (Crustacea, Daphniidae) from four new populations in the Alps. *Journal of Limnology*, 70: 239-247.

Daphnia middendorffiana has an arctic, circumpolar distribution, with some isolated southerly populations restricted to mountainous areas, including the Alps. In this paper, new records of *Daphnia middendorffiana* on the Alps are reported. The species was regularly recorded in several samples collected from 2006 to 2009 in four high altitude lakes in the Gran Paradiso National Park (GPNP) during the ice free period. This is the third finding for the Alps and the described populations are the largest. Chemical and morphometric features of the lakes are provided, the morphology of the *Daphnia middendorffiana* from GPNP is described as well as some aspects concerning its ecology. The studied lakes are small, oligotrophic (total phosphorus ranged from 0 to 7 $\mu\text{g L}^{-1}$) and well preserved from acidification risk (pH ranged from 6.45 to 8.14). *D. middendorffiana* is the largest zooplanktonic crustacean inhabiting the Alpine lakes in GPNP reaching 3.43 mm in length; the morphological analysis noted some differences within the studied populations; however there is a clear resemblance to the only Alpine population previously described (from Central Alps, Bognanco Valley, Lake Campo IV) and to the arctic populations. *D. middendorffiana* in GPNP lives at low density levels, reaching higher densities in late August and early September. No males have been found during the sample campaign confirming its ability to produce asexual viable diapauses eggs. This study confirms the attitude of this species for cold and oligotrophic waters and increases the current knowledge on the geographical distribution, morphology and ecology of this species in Alpine environments. The finding of *D. middendorffiana* in the GPNP poses interesting issues concerning the phylogeography of Alpine *Daphnia middendorffiana*, as well as raising need for conservation efforts aimed at keeping the populations safe from several global and local threats, such as climate warming and the ecological impact of alien species.

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