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SUBANTARCTIC PLANTS FACING CLIMATE CHANGE: THE ROLES OF METABOLIC AND LIFE HISTORY PLASTICITIES

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Rapid climate change is occurring in the sub-Antarctic region. In the southern Indian Ocean, Kerguelen has suffered a slight increase in mean annual temperature (+1.3°C) and a severe water deficit (up to 40%) since the mid 1960s. Possibly in relation to this climate change, we observe a high mortality in several autochthonous plant species, and increased colonization success of some aliens. Nevertheless, aliens are more restricted than autochthonous plants in their ecological amplitudes. What are the capabilities of introduced or native subantarctic plants to acclimatize or adapt their physiology and life history to climate change ?

We inferred the species plasticity from the flexibility of polyamine metabolism and of plant size. Polyamines regulate plant development and are known to respond to environmental conditions, and are thus a useful tool to investigate plant physiological plasticity. We used natural environmental gradients for altitude, water availability and salinity as proxies for climate change. This approach was performed in subantarctic Crozet and Kerguelen, two archipelagos with similar floras, but different trends for climate change. Samples were analysed through high performance liquid chromatography. Data were treated with ordination analysis.

We found that two endemic species, *Pringlea antiscorbutica* (Brassicaceae) and *Lyallia kerguelensis* (Hectorellaceae), showed particularly high concentrations and diversities of polyamines. In *P. antiscorbutica*, this composition was highly plastic in relation to abiotic conditions. Some polyamine (e.g. spermidine) accumulations appeared related to cold conditions. Not commonly found in higher plants, acetylpolyamines were accumulated at high levels in *P. antiscorbutica* exposed to water stress.

We investigated polyamine flexibility in relation to abiotic conditions in several introduced or native species to assess their physiological plasticity. This work aims at providing a tool for assessing the ability of autochthonous and alien plants to acclimatize to climate change in the sub-Antarctic.