



Project acronym: CLUNDRA

Project title: Phenotypic plasticity in clonal tundra shrubs

Project leader: Alba Anadon-Rosell, University of Greifswald (Germany)

Discipline: Life Sciences & Biotech: Other - Life Sciences & Biotech

Station(s): Finse Alpine Research Centre (Norway)

Plants may adjust to changing environmental conditions through phenotypic plasticity, which is the ability of a single genotype to produce different phenotypes. At the alpine and Arctic tundra, the cover of shrub species is increasing due to climate warming and land-use change. Most of these species propagate through subterranean rhizomes from which aerial shoots (i.e. ramets) arise. So far, little attention has been given to the limits of phenotypic plasticity in functional traits in shrub species, and few studies consider their clonal nature in their study design. This project aims at providing crucial insights into the importance of phenotypic plasticity for tundra clonal shrubs when facing different environmental conditions. Data obtained in populations near the INTERACT station in Finse will be combined with data from one of their southernmost distribution areas (Pyrenees), and with data obtained in Northern Sweden. The project will use dendrochronological techniques to retrospectively study phenotypic plasticity in growth and anatomical traits on ramets within clones, between clones and between populations. Selected key functional traits related to plant size and resource acquisition will also be measured to compare trait variability at intra- and inter-clonal, and at intra- and inter-population scales. This project will significantly advance the current understanding of phenotypic plasticity of tundra clonal shrubs and their potential to cope with environmental change; and will fill the current research gap on the extent of intra-clonal variability in functional traits.