

Are all dune grasses the same?

Assessing intra- and interpopulation differences in experimental conditions

Department: Physical Geography

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Project description

Coastal dunes are biogeomorphic landscapes, meaning that they formed through reciprocal interactions between sediment transporting processes and vegetation growth. Along the European coasts, a single species: marram grass (*Ammophila arenaria*) is responsible for building the majority of coastal dunes. Worldwide, *Ammophila* is known as the species that builds the highest dunes due to its ability to trap sand efficiently through its aboveground structure and the capacity to vertically outgrow high rates of sediment burial. However, as the physical conditions (e.g., temperature, precipitation, sediment availability, nutrient availability) can differ along the European coast, potentially individuals have evolved different characteristics (e.g., growth rate, leaf size, seed mass) to cope with these prevailing conditions and to optimize dune formation in their specific environment.

In this project we have measured a suite of different plant characteristics of 750 individuals of *Ammophila arenaria* spread over 14 populations along the European coast from Sweden to Portugal and three populations on the Westcoast of the US. As a next step we are now doing experiments with the seeds we collected from the marram grass individuals to see if the individuals show differences in their growth characteristics when grown in the same environments. Second, we wish to deduce whether these differences are the resultant of adaptation to the physical conditions the parent plants grew up in. It will be your job to work further on this puzzle between biological and physical processes by assisting in the execution of seedling growth experiments together with researchers from the Molecular Plant Physiology group. Depending on the candidate's interests it is also possible to further describe the prevailing physical conditions using remote sensing applications.

Job requirements

We expect you to be enthusiastic about biology and plant research. You will conduct a lot of practical work (from removing seeds from grass flowers to measuring plant growth and/or performing lab analyses). Besides conducting practical work and performing lab analyses there are also possibilities to further describe the field physical conditions using remote sensing application, this requires the candidate to have some prior knowledge on GIS applications.