

How environmental stressors affect reproductive potential in a saltmarsh plant species *Plantago maritima*

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Abstract

We examined whether the presence or absence of different environmental stressors influenced the reproductive potential of a saltmarsh species - *Plantago maritima*. We focused on total seed output, seed quality and biomass of progeny. So far, there are no studies trying to answer the question of how different saltmarsh management affects the quality of seed in saltmarsh species. For the purposes of the study, plots subjected to light mowing, light or heavy grazing, trampling or rooting were designated in three nature reserves in Poland. On each plot, the abundance of infructescences per sq. metre was calculated. Mature infructescences were collected and their length and no of fruit capsules were measured. The seeds obtained from fruit capsules were weighted and sown in controlled conditions. The germination rate and the final germination percentage were calculated. A representative number of sprouts were grown. After a period of two months, the specimens were harvested and their total dry mass was measured. It was found that heavy grazing had the greatest effect on all of the studied characteristics. The presence of this factor resulted in shorter infructescences with a smaller number of fruit capsules. However, this phenomenon was compensated by the higher abundance of infructescences per sq. metre. At the same time seeds produced by grazed specimens were significantly lighter. Intensive trampling by people affected specimens in a similar way to heavy grazing, while mowing and rooting had less impact on the considered characteristics. Although a positive correlation between seed mass and germination success was found, the altogether lower seed mass had a negligible effect on germination parameters. Also, the differences in seed parameters did not affect dry mass of obtained progeny grown in lab conditions.

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