

The importance of the spatial configuration of marram grass (*Ammophila arenaria*) on dune functioning and biodiversity

Van De Walle Ruben, Hillaert Jasmijn, Vandegehuchte Martijn and Bonte Dries

Onderzoeksgroep Terrestrische Ecologie, Universiteit Gent (TEREC-UGent), Karel Lodewijk Ledeganckstraat 35, 9000 Gent, Belgium
E-mail: ruben.vandewalle@UGent.be

Dunes are beneficial to humans because they provide ample ecosystem functions such as recreation and flood protection (Van der Biest *et al.* 2017). Marram grass (*Ammophila arenaria*) is the keystone-species in dune development because of its effective sand fixation. This enables dunes to grow, counteracting sea-level rise due to climate change, and furthermore regenerate e.g. after a storm. The spatial configuration of marram grass influences its sand fixation capabilities (Reijers *et al.* 2019) and thus also the self-regenerating capabilities of the dune as a whole.

However, so far little research is done on the optimal spatial configuration of marram grass in relation to self-regeneration of dunes. We tried to gather more insights into (the strength of) the relation between the spatial configuration of marram grass in a dune and its self-regenerating capabilities by modelling the regeneration of a dune after a storm event. Our model is different to many other models in that we also model the growth of the marram grass itself instead of regarding it as something static. Further validation (field test/reverse modelling) are needed to test the outcome of our model, but so far it looks promising.

Dunes are not only pure coastal defence structures. They also form a unique habitat full of species that are exclusively found here (Provoost & Bonte 2004). In a second part of our research we investigated the link between the spatial configuration of marram grass and the biodiversity. To assess the biodiversity we sampled the invertebrate community from marram grass tussocks in the foredunes across the coast of the Netherlands, Belgium, France and the UK during 3 consecutive summers. We compared the species richness with the spatial configuration of marram grass in order to get a better understanding of the link between both. This knowledge will be used to assess what the effect of modifying the spatial configuration of marram grass will be on the invertebrate community. Hopefully we will be able to find a way to adjust spatial configuration of marram grass so that coastal protection and biodiversity can both be optimized.

References

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