

## **COVER PHOTOGRAPH AND FRONT MATTER: FORE DUNES ALONG THE NORTH SEA'S DELFLAND COAST, THE NETHERLANDS**

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**Fore dunes along the North Sea's Delfland Coast, The Netherlands.** An interesting geomorphologic landscape feature is shown above as a dynamic fore dune complex that resulted from the interplay between wind, sand, and vegetation after a few stormy days. Prevailing winds from the North Sea have blown large amounts of sand from the beach, which then becomes trapped by a narrow line of Marram grass (*Ammophila* spp). About 50–75 cm of sand was accumulated in only a few days, even so much that the grass itself is almost buried. Along the lee-side embankment behind these grasses, a kind of cuesta-shaped sand body is formed. The windward slope is gentle and rising, while the leeward slope is steep (*ca.* 60°) and caused by the gravity fall of dry sand grains (particle size is about 250–300  $\mu$ ). This sand body is approximately 5–10 m wide and several 100 m in length, following the Marram that was planted here along the beach in long rows. Re-enforced dunes afford better protection against coastal erosion and flooding and Marram is noted for its ability to trap sand and build up dunes in a natural way. The fresh dune sand is exploited by new tapering roots of Marram for nutrients. Older, lower, sand layers in the fore dunes are infested by root-feeding nematodes and pathogenic microbes. They decrease the nutrient and water uptake capacity of the Marram roots. Plant species that naturally succeed Marram grass, such as Fescue and Sand sedge, are tolerant of the pathogens of Marram. However, in due time, they also develop such soil-borne pathogens. This ecologic chain of plant-soil feedback interactions and consequences for succession in the fore dunes was demonstrated in The Netherlands by Van der Putten, Van Dijk, and Troelstra (1988) and Van der Putten, Van Dijk, and Peters (1993), stimulating new developments in ecologic theory. (Photograph taken 20 August 2014 by Frank van der Meulen, Frank van der Meulen Consultancy, frank.vandermeulen@hetnet.nl, The Netherlands.)

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