

Halophilic spiders and Carabid beetles as indicator for salt gradients in the Slufter on Texel

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The Slufter on Texel is a salt marsh area behind dunes with an open contact with the North Sea and daily tidal entrance of sea water. Changed management concerning the connection with the North Sea includes the possibility of increased influences of entering sea water, which may affect N2000 nature values through changes in salt gradients. A spatial Multi Criteria Analysis using salt sensitivity and rarity of N2000 nature values revealed that several important nature values in the Slufter are associated with salt gradients. The present research aimed for finding indicator animal species that can detect potential changes in salt gradients on the microhabitat early. Because of their ecological role as (top)predator and their sensitivity for change in a microhabitat, spiders and Carabid beetles were used. In April-July, animals were caught monthly for 4 days with 55 pitfalls on 11 salt gradients in sensitive areas. Beside soil salinity, also habitat aspects (a.o. salt marsh type, vegetation height) were recorded.

In total, 4084 spiders of 71 species were caught, of which 3 halophilic species. In total, 968 Carabid beetles of 38 species were caught, of which 5 halophilic species. Number of halophilic spider species was associated with soil salinity and vegetation height. Number of halophilic Carabid beetle species was associated with soil salinity and salt marsh type. Per ‰ increase in soil salinity, the increase in number of halophilic species was estimated as 8.6% for halophilic spiders and 9.7% for halophilic Carabid beetles. These species groups appear related to soil salinity and thus potentially useful as indicators for changes in salt gradients in the Slufter.