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Assessing of coastal habitat quality in relation to conservation objectives on the southeast Baltic Sea coast in Latvia

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INTRODUCTON

Protecting the seashore habitats and balancing ecological processes with ecosystem services is one of the biggest challenges today. Habitats in a ‘favourable’ conservation status are more resilient to the anthropogenic impact. An objective and timely assessment of the habitat is an important prerequisite for the effective protection of this habitat.

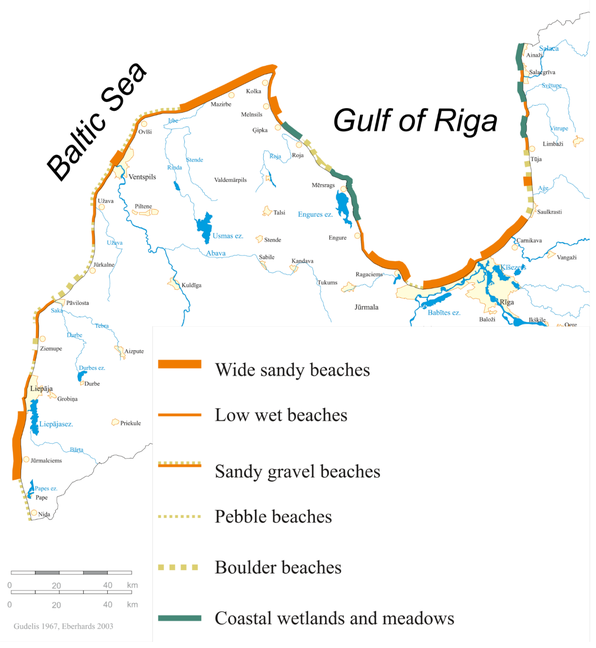
In Latvia assessment of habitat quality carried out based on the mapping of EU protected habitats (the Project 'Nature Census’, 2017–2021). Along entire 495 km long Latvian coast in total 65 427 ha of 14 halophytic and dune habitats were mapped. Information on habitat structures, ecological processes, impacts, and species were entered on the standardised data forms and collected in the Nature data management system "Ozols" (https://www.daba.gov.lv/en/nature-data-management-system-ozols). The algorithm for quality assessment has been developed for each habitat type, using the most important parameters, and assigning them positive or negative values. Based on the sum of these values, habitat quality was assessed.

DATA AND METHODS

In this study, data on 759 polygons of beach and primary dune habitats have been analysed in order identify the most important parameters used to improve algorithms for the assessment of habitat quality and defining conservation objectives. Non-metric multidimensional scaling (NMDS) approach were applied for data analysis.

RESULTS

For beach and primary dune habitats, the main influencing factors are related to seashore geomorphology and coastal processes (beach width, pools and depressions; organic drift material, sand accumulation and erosion).



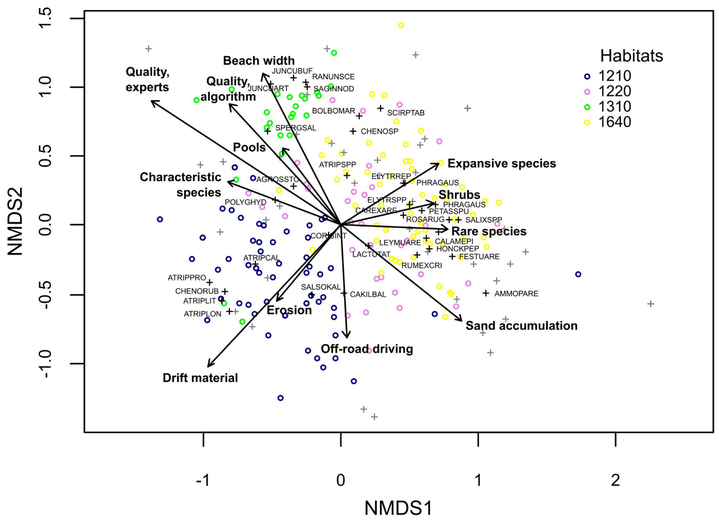
Parameters included in the algorithm

Parameter	1210	1220	1310	1640	2110	2120
Beach width			x			
Beach pools, depressions		x	x	x		
Sand accumulation					x	x
Drift material	x	x	x	x	x	x
Typical vegetation	x	x	x	x	x	x
Old *Ammophila arenaria*						x
Shrubs and trees	x				x	x
Invasive species	x	x	x	x	x	x
Expansive species	x	x	x	x	x	x
Rare and protected species	x	x	x	x	x	x
Trampling	x	x	x	x	x	x
Off-road driving	x	x	x	x	x	x
Removal of drift material	x	x	x	x	x	x
Erosion		x		x	x	x

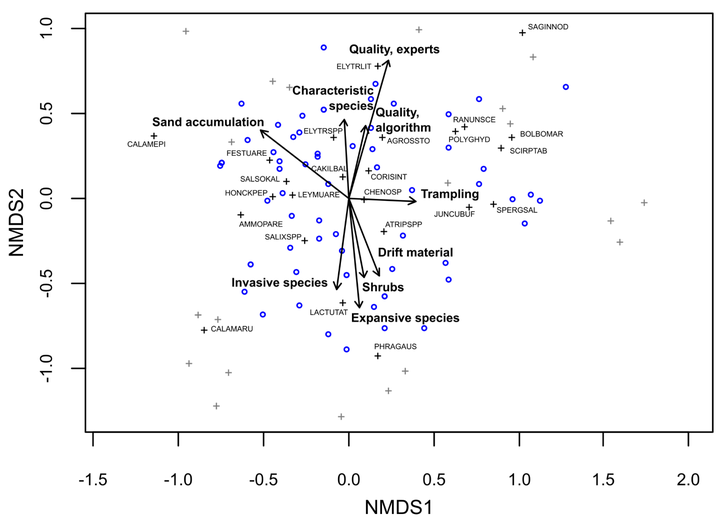
recommended additional parameter for the algorithm

the most important parameters

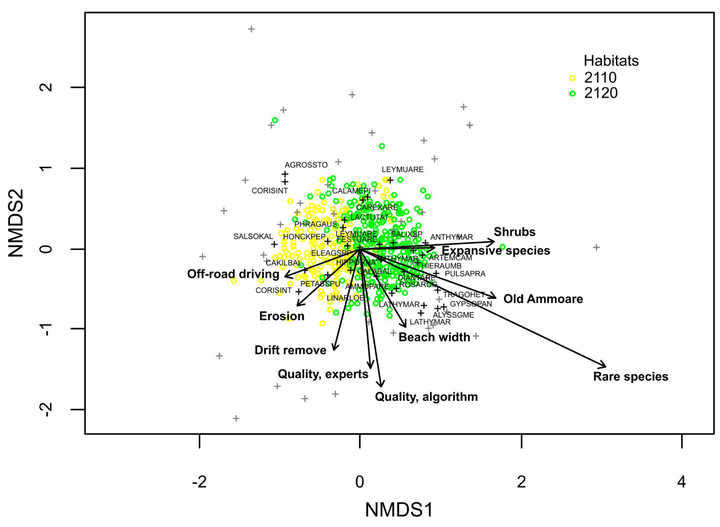
Ordination of beach habitats



Ordination of beach habitat (1640)



Ordination of embryonic and foredune habitats



EU habitat types

1210 Annual vegetation of drift lines
1220 Perennial vegetation of stony banks
1310 Salicornia and other annuals colonising mud and sand
1640 Boreal Baltic sandy beaches with perennial vegetation
2110 Embryonic shifting dunes
2120 Foredunes

Vegetation structures (cover of shrubs, expansive and invasive plants), are also important indicators and can be effectively used in habitat quality assessment. Only four of the human impacts included in the analysis were significantly associated with specific habitat types. The importance of rare species as an essential parameter increases in habitats in the direction from sea to land.

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LATVIANATURE

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