B1.4c Black Sea coastal dune grassland (grey dune)

Summary

This (so-called 'grey') dune grassland occurs on stabilised or semi-stabilised coastal sands around the Black Sea, mostly on the western and north-western stretches and now only very locally. The dunes are best developed on broader flatter shores and the ridges can vary from just a few metres high to over 50m, with moister depressions between. The flora is variable with a shift from Mediterranean to Pontic moving northwards, with many regional endemic plant species among its grasses and herbs. Perennials predominate but there can be striking contingents of annuals on more mobile stretches of sand on the ridges, and mosses and lichens can be extensive on north-facing, less sunny slopes. The habitat has drastically decreased in quantity and quality in recent times with touristic development, forest plantations, and invasion of atypical and alien species. Overgrazing can also still be a serious threat. The habitat needs strict protection and some restoration activities, like removal of invasive plants and artificial forests.

Synthesis

The habitat type is assessed as Endangered (EN) under Criterion B1 and B2 both at the EU28 and the EU28+ levels, as the habitat has a small geographical distribution (extent of occurrence (EOO) < 20,000 km^2 and area of occupancy (AOO) < 20 km^2), and there is a continuing decline in spatial extent of the habitat. Due to touristic development, invading non-native plants and artificial forest plantations, the habitat is likely to experience continuing decline in quantity and/or quality within the next 20 years.

Overall Category & Criteria			
EU 28		EU 28+	
Red List Category	Red List Criteria	Red List Category	Red List Criteria
Endangered	B1, B2	Endangered	B1, B2

Sub-habitat types that may require further examination

In general there are two subtypes: a northern one in Romania and northernmost coast of Bulgaria and a southern one in Bulgaria. Both subtypes are rich in endemic vascular plants.

Habitat Type

Code and name

B1.4c Black Sea coastal dune grassland (grey dune)

B1.4c Grey dunes in Ropotamo Reserve, Southern Black Sea Coast, Bulgaria (Photo: Rossen Tzonev).

B1.4c Grey dunes in Durankulak Region, Northern Black Sea Coast, Bulgaria (Photo: Rossen Tzonev).

Habitat description

Stabilized or semi-stabilized dune grasslands (grey dunes) represented by perennial communities, dominated by grasses, herbs, mosses and lichens. The type is distributed along the Black Sea coast, but mostly found in its western and north-western part. This habitat includes dune complexes which differ in size and height (from 2–3 m up to 50 m above sea level). These dunes are better developed on flat shores, where there is a wider contact zone between the Black Sea influence and the adjacent vegetation, mostly forests. The vegetation of the Black Sea dunes is a complex of grasslands, small shrubs and small forests. Perennial species dominate but many annuals occur, principally on the more mobile sands, usually present on high ridges. On northern exposed, moist slopes, many mosses and lichens occur. The most fixed wet sands at the depressions in the dunes are covered by the coenoses mostly dominated by tall grasses, sedges and rushes, forming transitions to humid dune slacks (habitat B1,8b). The vegetation of the Black Sea fixed dunes shows a large diversity in species composition. Along the western coast of the Black Sea it changes gradually from south to north. The main gradient is climatic and also biogeographical. This gradient is associated with a reduction of East-Mediterranean species and an increase of Pontic steppe species. According to this gradient the Western Black Sea grey dunes are divided into two main types: northern and southern grey dunes, with the Balkan Range in Bulgaria as a conditional border between the two sub-types. The northern Black Sea grey dunes have optimal distribution in the region of the Danube Delta in Romania and around the Azov Sea in Ukraine. The southern Black Sea dune grasslands are widely distributed in the Southern Black Sea coast of Bulgaria and European Turkey. Especially the southern Black Sea dunes are rich in some Balkan and Balkan-Anatolian endemics, like *Lepidotrichum uechtritzianum*, while the northern types are less rich in both annuals and endemic species. These dune grasslands are threatened by direct destruction and degradation from the construction activities in resort areas, both in Bulgaria and Romania. There is also invasion of natural and alien shrub and three species as *Paliurus spina-christi, Ailanthus altissima, Amorpha fruticosa, Robinia pseudacacia, Eleagnos angustifolia*.

Characteristic species:

Vascular plants: *Alyssum borzaeanum, Alyssum hirsutum, Artemisia campestris, Astragalus onobrychis, Astragalus varius, Astrodaucus littoralis, Carex ligerica, Centaurea arenaria, Cynanchum acutum, Cionura erecta, Convolvulus persicus, Corispermum nitidum, Dianthus polymorphus, Ephedra distachya, Erysimum diffusum, Euphorbia sequierana, Festuca beckerii, Festuca vaginata, Gypsophila trichotoma, Helichrysum arenarium, Galiliea mucronata, Jasione heldreichii, Jurinea albicaulis, Koeleria glauca, Lepidotrichum uechtritzianum, Linaria genistifolia, Linum tauricum, Marrubium peregrinum, Melica cilliata, Pancratium martimum, Rumex tenuifolius, Scabiosa argentea, Secale sylvestre, Seseli tortuosum, Silene borystenica, Silene euxina, Silene thymifolia, Stipa borysthenica, Syrenia montana, Teucrium polium, Verbascum purpureum*.

Mosses: *Grimmia sp. pl. Tortella sp. pl., Tortula ruralis*.

Lichens: *Cladonia sp.pl*.

Fauna

Amphibians and reptilians: *Pelobates syriacus, Testudo graeca, Eremias arguta, Podarcis taurica, Vipera ursinii*.

Birds: *Burchinus oedicnemus, Charadrius alexandrinus, Calandrella brachydactylla*

Insects: *Stibaropus henkei, Byrsinus fossor*

Classification

This habitat may be equivalent to, or broader than, or narrower than the habitats or ecosystems in the following typologies.

EUNIS:

B1.4 Coastal stable dune grassland (grey dunes)

EuroVegChecklist:

Sileno thymifoliae-Jurineion kilaeae Géhu et Uslu ex Mucina in Mucina et al. 2012

Cynodonto-Teucrion polii Korzhenevsky et Klyukin 1990

Verbascion pinnatifidii Korzhenevsky et Klyukin 1990

Scabiosion ucranicae Sanda et al. 1980

Melico chrysolepidis-Ephedrion distachyae Umanets et Solomakha 1999

Annex 1:

2130 Fixed coastal dunes with herbaceous vegetation ('grey dunes')

Emerald:

B1.4 Coastal stable dune grassland (grey dunes)

MAES-2:

Grassland

IUCN:

13.3 Coastal Sand Dunes

Does the habitat type present an outstanding example of typical characteristics of one or more biogeographic regions?
Yes

Regions
Black Sea

Justification
The habitat is an outstanding example for the Black Sea Biogeographic region. The vegetation is rich in many local and regional endemics, which sometimes even are dominant in the psammophytic communities.

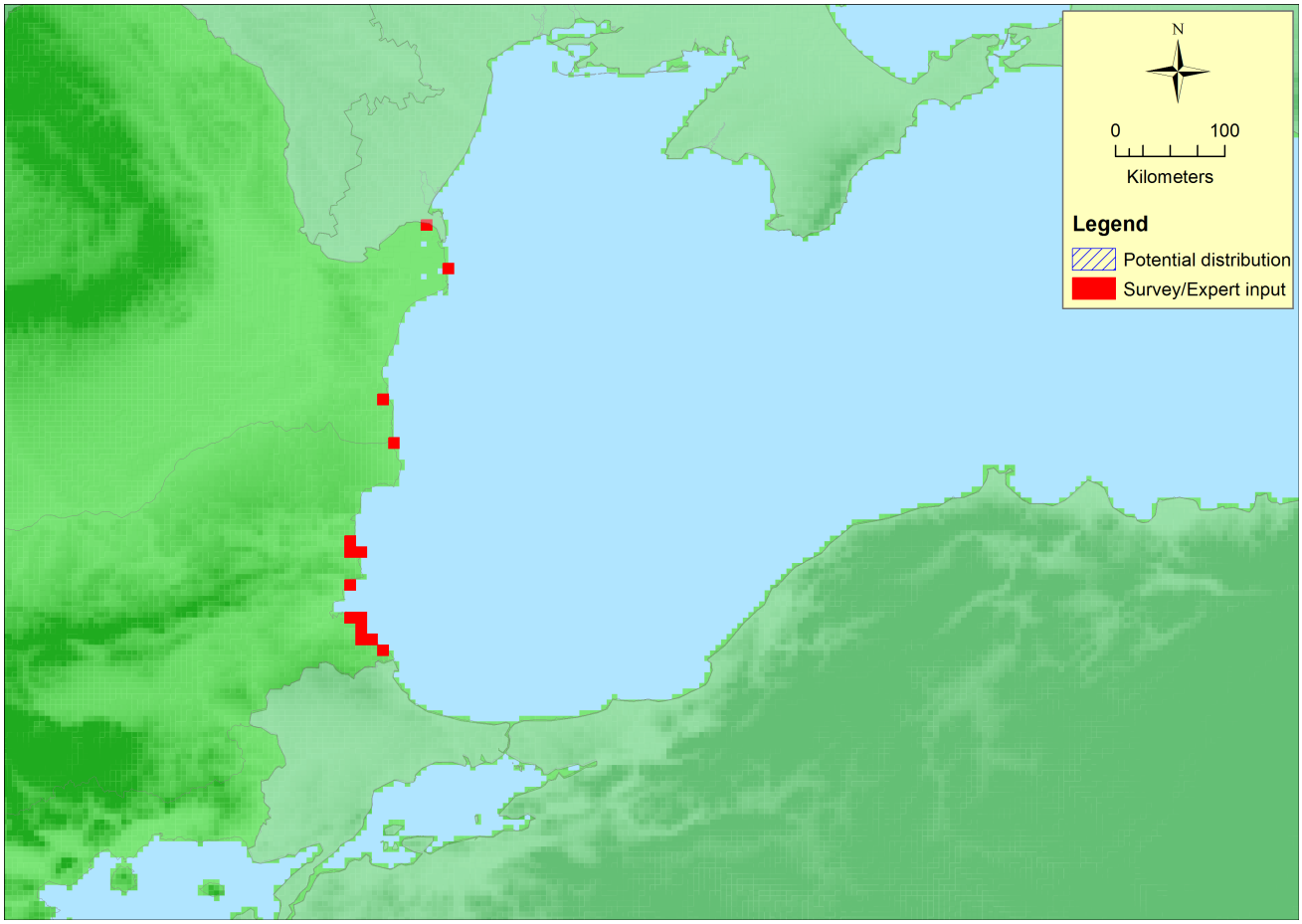
Geographic occurrence and trends

EU 28	Present or Presence Uncertain	Current area of habitat	Recent trend in quantity (last 50 yrs)	Recent trend in quality (last 50 yrs)
Bulgaria	Present	4.1 Km^2	Decreasing	Decreasing
Romania	Present	5 Km^2	Decreasing	Decreasing

Extent of Occurrence, Area of Occupancy and habitat area

	Extent of Occurrence (EOO)	Area of Occupancy (AOO)	Current estimated Total Area	Comment
EU 28	18850 Km^2	14	9.1 Km^2	
EU 28+	18850 Km^2	14	9.1 Km^2	

Distribution map



The map is complete. Data sources: Art17.

How much of the current distribution of the habitat type lies within the EU 28?

Probably more than 50%. The area of the habitat occurring in other Black Sea countries like Turkey, Ukraine, Georgia and Russia is unknown, but sand dunes prevail on the western coasts of the Black Sea.

Trends in quantity

The decrease is about -12% for EU over the last 50 year. After 1960 the habitat has been decreased of more than 20% in Bulgaria, because of the great touristic development and many new resorts along the coast which impacted the dunes. The reduction in Romania has been less, not more than 5% for the same period, caused by the construction of new resort areas south of Cape Midia. Now the habitat is more stable in Romania, as the biggest part is included in some protected areas, mostly in the Danube Delta Biosphere Reserve. The decrease is continuing slightly in Bulgaria due to touristic pressure. The future trend is probably a slight decrease in Bulgaria and a more or less stable condition in Romania.

- Average current trend in quantity (extent)
  EU 28: Decreasing
  EU 28+: Decreasing
- Does the habitat type have a small natural range following regression?
  Yes
  Justification
  The EOO is very small and the area is decreasing.
- Does the habitat have a small natural range by reason of its intrinsically restricted area?
  Yes
  Justification
  The habitat covers a small area because it can develop only in a narrow stripe along the Black Sea coast,

being dependent on the local geomorphological structures and climatic conditions.

Trends in quality

The extent of degradation is about 43% with a severity of 56%. These trends have been calculated from the reported trends in quality (extent and severity) by Romania (slight, -5%) and Bulgaria (-70%) in the territorial data. The severe decline is mostly because of the great habitat degradation in Bulgaria due to the touristic development after 1960.

- Average current trend in quality
  EU 28: Decreasing
  EU 28+: Decreasing

Pressures and threats

The biggest threats are human intrusion and disturbance (trampling, driving off road), new urbanised areas and human habitations because of the touristic developement, different kinds of pollution, alien species of grass, shrubs and trees, planting of trees (including some invasive species) and ruderalisation because of overgrazing (especially in Romania).

List of pressures and threats

Agriculture

Grazing
Intensive grazing

Sylviculture, forestry

Forest planting on open ground
Artificial planting on open ground (non-native trees)

Urbanisation, residential and commercial development

Urbanised areas, human habitation
Continuous urbanisation

Human intrusions and disturbances

Outdoor sports and leisure activities, recreational activities
Walking, horseriding and non-motorised vehicles
Motorised vehicles
Off-road motorized driving
Other human intrusions and disturbances
Trampling, overuse

Pollution

Garbage and solid waste

Invasive, other problematic species and genes

Invasive non-native species

Conservation and management

The most important conservation tool is a strict protection of preserved dune systems. Further projects for the restoration of some habitat areas should be carried out, including the removal of non-typical forest plantations, invasive species, waste, etc. Possible positive measure is also the construction of some fences

and roads for protection of the dune structure. It will prevent the trampling and off-road driving which destroies significantly the dune systems.

List of conservation and management needs

Measures related to wetland, freshwater and coastal habitats

Restoring coastal areas

Measures related to spatial planning

Establish protected areas/sites
Legal protection of habitats and species

Measures related to urban areas, industry, energy and transport

Urban and industrial waste management

Conservation status

Annex 1:

2130: BLS U1

When severely damaged, does the habitat retain the capacity to recover its typical character and functionality?

The habitat has some capacity to recover naturally but it is dependent on some geological processes which are intrinsically very slow. It could be restored in some areas where artificial forest plantations have been planted or where there is an invasion of non typical plant species.

Effort required

20 years	200+ years
Through intervention	Naturally

Red List Assessment

Criterion A: Reduction in quantity

Criterion A	A1	A2a	A2b	A3
EU 28	-12 %	unknown %	unknown %	unknown %
EU 28+	-12 %	unknown %	unknown %	unknown %

The habitat has been decreased about 20% in Bulgaria (now 4.1 km^2) and about 5% in Romania (now 5 km^2) during the last 40 to 60 years. In total it was reduced from 10 km2 to 9.1 km^2, showing a reduction trend of nearly 12.4%. There is no information on longer historical trends. In future a small further decline is expected, but quantitative data is not available.

Criterion B: Restricted geographic distribution

Criterion B	B1				B2				B3
	EOO	a	b	c	AOO	a	b	c	
EU 28	18850 Km^2	Yes	Yes	no	14	Yes	Yes	no	no
EU 28+	18850 Km^2	Yes	Yes	no	14	Yes	Yes	no	no

Both values (AOO and EOO) are relatively small and they will meet criterion B because of continuing decline in quantity and quality. The ecosystem exists at more than 10 locations.

Criterion C and D: Reduction in abiotic and/or biotic quality

Criteria C/D	C/D1		C/D2		C/D3	
	Extent affected	Relative severity	Extent affected	Relative severity	Extent affected	Relative severity
EU 28	43 %	56% %	unknown %	unknown %	unknown %	unknown %
EU 28+	43 %	56% %	unknown %	unknown %	unknown %	unknown %

Criterion C	C1		C2		C3	
	Extent affected	Relative severity	Extent affected	Relative severity	Extent affected	Relative severity
EU 28	Unknown %	Unknown %	Unknown %	Unknown %	Unknown %	Unknown %
EU 28+	Unknown %	Unknown %	Unknown %	Unknown %	Unknown %	Unknown %

Criterion D	D1		D2		D3	
	Extent affected	Relative severity	Extent affected	Relative severity	Extent affected	Relative severity
EU 28	Unknown %	Unknown%	Unknown %	Unknown%	Unknown %	Unknown%
EU 28+	Unknown %	Unknown%	Unknown %	Unknown%	Unknown %	Unknown%

The overall extent and severity are the weighted average calculated from reported data from Bulgaria and Romania. The involved countries could not provide any information on long historical or future trends in quality (CD2, CD3, C2, C3, and D2). The changes in quality are both abiotic (waste, trampling) and biotic (invasive species, changes in species composition), so C/D1 has not been split into C1 and D1.

Criterion E: Quantitative analysis to evaluate risk of habitat collapse

Criterion E	Probability of collapse
EU 28	unknown
EU 28+	Unknown

There is no quantitative analysis available that estimates the probability of collapse of this habitat type.

Overall assessment "Balance sheet" for EU 28 and EU 28+

	A1	A2a	A2b	A3	B1	B2	B3	C/D1	C/D2	C/D3	C1	C2	C3	D1	D2	D3	E
EU28	LC	DD	DD	DD	EN	EN	DD	NT	DD	DD	DD	DD	DD	DD	DD	DD	DD
EU28+	LC	DD	DD	DD	EN	EN	DD	NT	DD	DD	DD	DD	DD	DD	DD	DD	DD

Overall Category & Criteria			
EU 28		EU 28+	
Red List Category	Red List Criteria	Red List Category	Red List Criteria
Endangered	B1, B2	Endangered	B1, B2

Confidence in the assessment

Medium (evenly split between quantitative data/literature and uncertain data sources and assured expert knowledge)

Assessors

R. Tzonev

Contributors
Habitat Definition: R. Tzonev

Territorial data: M. Fagaras, R. Tzonev

Working Group Coastal: A. Acosta, F. Bioret, H. Gardfjell, J. Janssen, J. Loidi, R. Tzonev

Reviewers
D. Gigante

Date of assessment
27/09/2015

Date of review
20/04/2016

References

Donita N, Popescu A, Pauca-Comanescu M, Mihailescu S & Biris I 2005. Habitatele din România. Edit. Tehnică Silvică, Bucureşti, 500 p.

Morariu I 1957. Contribuţii la conoaşterea vegetaţoiei litoralului Mării Negre.Bul. Stiintific Acad. R.P.R., Bucureşti 9: 361–390.

Tzonev R 2012. Black Sea fixed (gray) dunes. In: Bisserkov V. et al. (eds). Red Data Book of Bulgaria. Vol.3. Natural habitats.

Tzonev R Dimitrov M & Roussakova V, 2005. Dune vegetation along Bulgarian Black Sea coast. Hacquetia 4(1): 7-32.

Vicherek J 1971. Grundriss einer Systematik der Strandgesellscaften des Schwarzen Meers. Folia Geobot. Phytotax. 6: 127-147.