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EUNIS Terrestrial Habitat Classification of the Bozcaada West Cape Dune in Turkey

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Abstract

The European Nature Information System (EUNIS) plays a crucial role in documenting and classifying biodiversity and natural habitats across Europe. Despite its comprehensive coverage, the EUNIS habitat classification system has not been fully adapted for Turkey. This study aims to contribute to the classification and understanding of habitats in Turkey by focusing on the coastal sand dunes of Bozcaada, the third largest island in Turkey. The research area, located at the West Cape of Bozcaada, covers 3.27 km² and represents a unique ecosystem within the Mediterranean basin. The study employs the EUNIS habitat classification system to identify and map habitat types using Google Earth Pro, field observations, and ArcGIS 10.8.2 for data processing. A total of three ecosystems and seven habitat types were identified, including unvegetated Mediterranean and Black Sea sand beaches, Western Tethyan embryonic dunes, dune sclerophyllous scrubs and thickets, Mediterranean coniferous coastal dune forest, Mediterraneo-Pontic sea-cliffs and rocky shores, *Pinus brutia* forests, and fallow un-inundated fields with annual and perennial weed communities. The findings highlight the ecological significance of Bozcaada's coastal sand dunes, emphasizing the need for further conservation efforts and detailed habitat classification to support biodiversity management and protection strategies.

Keywords: Coastal Dunes, Habitat Classification, EUNIS, Bozcaada, Biodiversity Conservation

Introduction

The European Nature Information System (EUNIS) is an information system that documents and classifies biodiversity and natural habitats across Europe. Initiated by the European Environment Agency (EEA) in 1996, EUNIS aims to collect, manage, and share biodiversity data throughout Europe. The system provides comprehensive data on habitats, species, and protected areas. EUNIS offers information about the Natura 2000 network and other protected sites and integrates with other biodiversity information systems. Continuously updated, EUNIS is accessible online to researchers, policymakers, and the public, serving as a crucial tool for the conservation and sustainable management of biodiversity (Moss and Davies, 2002).

The classification of habitats is considered an essential tool for the conservation of ecosystems and natural species. It is crucial in creating inventories of natural areas, conducting biological conservation or monitoring studies, and setting targets for ecological restorations (Davies et al., 2004; Moss, 2008; Janssen et al., 2016; Chytrý et al., 2020).

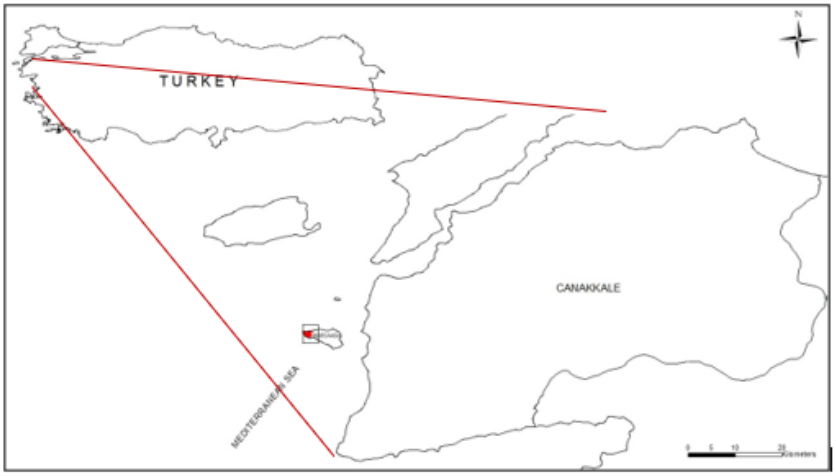
The EUNIS habitat classification, designed for Europe, has not yet been fully adapted for Turkey. Although efforts in this direction are ongoing, they are not yet sufficient. These efforts are generally based on projects conducted by the Ministry of Agriculture and Forestry, General Directorate of Nature Conservation and National Parks, aimed at documenting the biodiversity of all provinces. However, these projects have remained at the 2nd or 3rd level and have not been further detailed. According to the EUNIS status assessment for Turkey, there are a total of 140 EUNIS habitat types at the 3rd level, reported in bulk (Çakmak and Aytaç, 2021).

Islands, by their nature of separation from the mainland, develop in isolation, leading to the evolution of unique species and ecosystems. The biodiversity of an island is influenced by various factors, such as its size, geological history, and distance from other landmasses. More remote islands tend to have higher levels of endemic species, as they have been isolated for longer periods, allowing distinct evolutionary processes to occur. Additionally, the range of habitats found on an island, from coastal areas to mountainous regions, contributes to its overall biodiversity. These factors make island ecosystems valuable for conservation and scientific research (Seçmen and Leblebici, 1978).

Coastal sand dunes are important ecosystems formed by the accumulation of sand particles due to the effects of wind and waves in coastal areas. Dunes are usually located behind beaches, parallel to the sea, and serve to prevent coastal erosion. The formation process begins with the wind blowing sand from the sea in a certain direction. When the transported sand is trapped by obstacles or vegetation, it begins to accumulate. Over time, the accumulated sands settle due to wind and vegetation, completing the formation of the dune. Coastal sand dunes host various plant species, which prevent the movement of dunes, retain soil, and prevent erosion. Therefore, coastal sand dunes are important for the stability and biodiversity of coastal ecosystems (Hesp, 2002; Maun, 2009).

Bozcaada, the third largest island of Turkey, is located in the Aegean Sea about 6 km west of the Çanakkale mainland (Figure 1). The island covers an area of 37 km². The chosen study area is a bidirectional coastal dune located at the West Cape in the west of the island, covering 8.83% of the island (3.27 km²) and spreading in a roughly triangular shape. It has a width of 2.4 km in the northwest-southeast direction and approximately 2.5 km in the northeast-southwest direction, extending in the northeast-southwest direction to match the prevailing wind direction on the island. The sand dune area starts from the seaside in the northeast and gradually increases to around 30 m towards the southwest, while it also increases in the east-west direction. This causes the dune to form in two directions.

Figure 1: Bozcaada's location in Çanakkale and Turkey.



The research area on the West Cape of Bozcaada is one of the sand dunes formed on limestones and located within the bush/forest group specific to the seacoast. This dune is one of the best examples of coastal dunes in the Mediterranean basin, with its unique topography and vegetation in Turkey.

The area consists of a large, yet unspoiled bushland specific to the marine climate, developed on limestone extensions. Although it does not harbor any endemic species, it is a special habitat due to its structure and vegetation. A typical dune vegetation developed on very shallow soil formed on the limestone plateau covers most of the area, along with various low woody plants. Despite its appearance as a bushland from afar, it does not contain species of the genus *Erica* Tourn. ex L.. Instead, it features coastal shrubs such as *Pistacia lentiscus* L., *Anthyllis hermanniae* L., *Cistus salviifolius* L., *Fumana thymifolia* Spach, *Sarcopoterium spinosum* Spach, and *Thymelaea tarton-raira* (L.) All..

As one moves away from the sea, particularly towards the southeast end of the area designated as an Important Dune Area, open coastal woody shrubs shaped by the wind, predominantly *Pinus brutia* Ten. (Calabrican Pine or Kızılçam in Turkish), become more prominent. Many of the pines in this woodland, known locally as the Latif çamlığı (local name of this pine woods), are shorter than 5 meters.

These vegetation types are divided by a series of dune ridges formed by wind effects. On the plateau's top, these ridges mostly extend in the southwest/northeast direction, while along the northern coast of West Cape, dune ridges form a continuous band.

Materials and Methods

Literature Review

At the outset of the study, previous works and projects related to the dunes of Bozcaada were reviewed. Sources such as the "Bozcaada Tourism Master Plan" (Anonymus, 2022), "Bozcaada Batıburnu Dune Flora and Dune Vegetation Mapping" (Karabacak et al., 2008), and "Flora and Ecology of Important Dune and Salt Marsh Areas in Çanakkale (Turkey)" (Özmen, 2009) were consulted.

Habitat Determination

The study utilized the European Environment Agency's (EEA) European Nature and Biodiversity Information System (EUNIS) habitat classification system. EUNIS habitat types were identified using current Google Earth Pro satellite imagery, field observations, and photographs. The EUNIS Habitat classification system developed by Davies, Moss, and Hill (2004) and the EUNIS website (2024) were referenced. The 2012 and 2021 updates of the EUNIS habitat classification system were considered in the study.

Digitization of Dunes

The dunes in the research area were digitized by drawing them as polygons in Google Earth Pro to obtain KML data. This data was processed in ArcGIS 10.8.2 using 1/25000 scale topographic maps and forest cover maps obtained from the Çanakkale Regional Directorate of Forestry to create the EUNIS habitat map of the area.

Results and Discussion

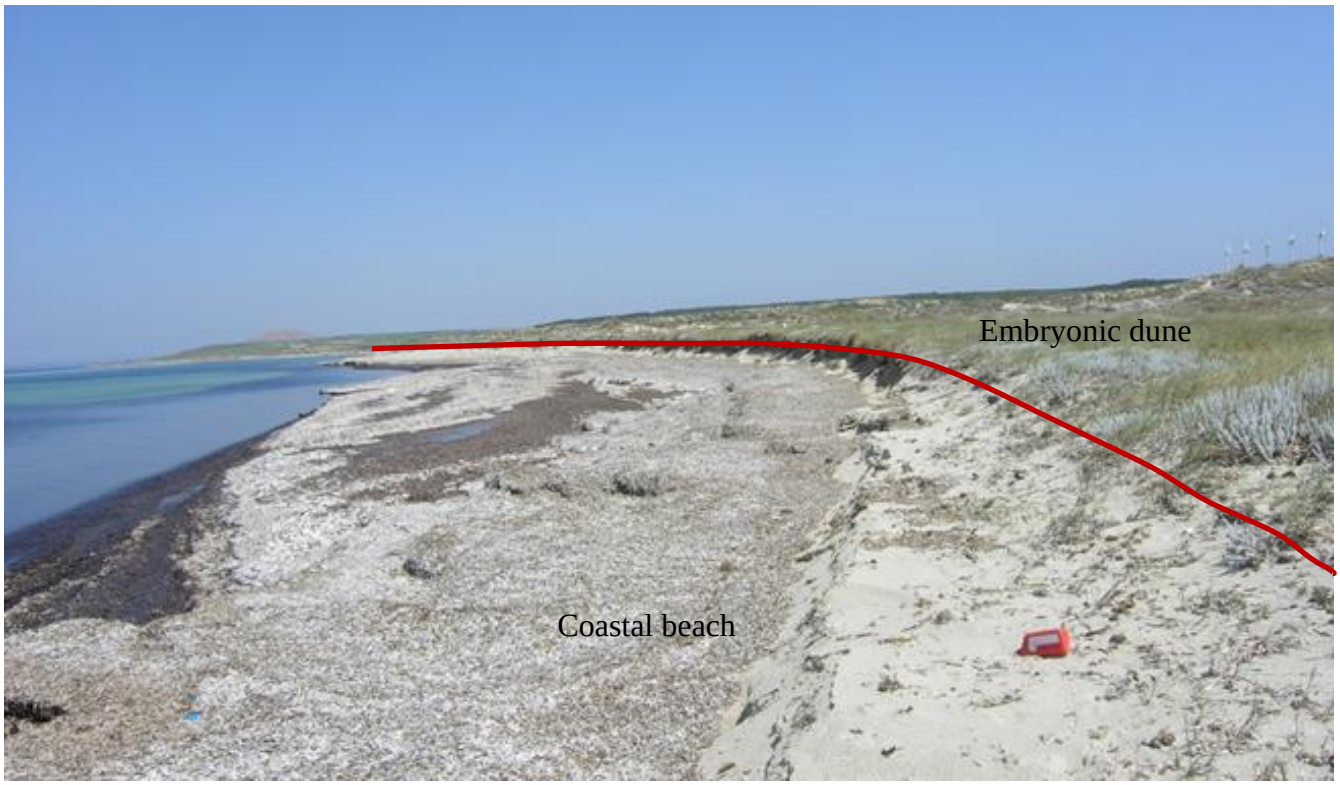
In our study conducted in the Bozcaada West Cape, a total of 3 ecosystems and 7 habitat types were identified according to the EUNIS habitat classification system. These ecosystems and habitat types are presented hierarchically below:

Unvegetated Mediterranean and Black Sea sand beaches above the driftline (EUNIS Type Code: N122)

The sandy beaches, associated seas, and coastal lagoons of the Mediterranean and Black Seas are typically devoid of vegetation cover. However, in some areas of the northern part of the study site, the shore is covered with leaf debris from species such as *Posidonia oceanica* (L.) Delile, *Zostera marina* L., *Zostera noltii* Hornem., and *Cymodocea nodosa* (Ucria) Asch., which are transported to the shore by waves (

Figure **2**).

Figure 2: Unvegetated Coastal Beaches on Northern Shores, and Embryonic Sand Dunes Behind Them



Western Tethyan Embryonic dunes (**EUNIS Type Code: N141)**

Embryo dunes are the youngest dunes in terms of formation and play a crucial role in stabilizing dune systems. The embryonic dune fields of the Mediterranean coast, characterized by the presence of *Thinopyrum junceum* (L.) Á.Löve (=*Elymus farctus* (Viv.) Runemark ex Melderis subsp. *farctus*), *Sporobolus virginicus* (L.) Kunth, *Euphorbia peplis* L., *Otanthus maritimus* (L.) Hoffmanns. & Link, *Medicago marina* L., *Anthemis tomentosa* L., *Eryngium maritimum* L. and *Pancratium maritimum* L., form the primary dunes and the foredune structure.

These dunes face the beach and consist mostly of exposed sand mounds. They gradually rise a few meters in height along the coast, forming gently sloping plains near the shore (

Figure **2**). Located just in front of the foredune ridges, these dunes do not support a rich diversity of plant species. Besides the characteristic dune species, other species identified in this layer include *Aetheorhiza bulbosa* (L.) Cass. subsp. *microcephala* Rech.f., *Calamagrostis arenaria* (L.) Roth (=*Ammophila arenaria*

(L.) Link subsp. *arundinacea* H.Lindb.), *Centaurea spinosa* L., *Cynodon dactylon* (L.) Pers., *Cyperus capitatus* Vand., *Euphorbia paralias* L., *Imperata cylindrica* (L.) Raeusch., *Parapholis incurva* (L.) C.E.Hubb, and *Polygonum maritimum* L. (Figure 3). In this area, *Otanthus maritimus* is quite common.

Figure 3: Embryo dunes with *Calamagrostis arenaria* communities

Dune sclerophyllous scrubs and thickets (EUNIS Type Code: N1B3)

The region is also known as the Fore Dune, or Yellow Foredunes. The sclerophyllous shrubs that inhabit the dunes of the Mediterranean and Warm-Temperate Humid regions are referred to as 'dune sclerophyllous scrubs'. These resilient plant species are specifically adapted to the harsh environmental conditions of dune ecosystems, such as drought, high salinity, and strong winds, playing a critical role in dune stabilization and the maintenance of local biodiversity. Behind the embryo dune, the fore dune often stands a few meters taller, with marram grass (*Calamagrostis arenaria* (L.) Roth (=*Ammophila arenaria* (L.) Link subsp. *arundinacea* H.Lindb.)) stabilizing it more than the younger dunes, and with more vegetation cover compared to completely bare sand. As more plants grow in the sand, this type of dune becomes more resilient to storms, allowing it to remain in the same position for many years. These free dunes, predominantly composed of white quartz sands and subjected to active deflation, extend parallel to the shoreline. The dune crests and the varying depth depressions separating them typically have moist bases. In the central part of the dune field, the fore dunes, which extend extensively and rise both eastward and southward, exhibit richer vegetation, although no soil formation has been observed in vertical sections. The identified species are listed below by region.

Semi-fixed dune

Specific regions of the dune, semi-fixed dunes can be observed, where plant roots reach deep into the dune. Although these dunes are generally stable, they can still have exposed sand on their surfaces that is able to move. These dunes continue to accumulate sand from the beach and can be blown over the ridge and inland to grow the dunes behind them. These dunes are often referred to as 'yellow dunes' due to the colour of the sand.

On the ridges of these dunes, the following taxa have been observed: *Aetheorhiza bulbosa* (L.) Cass. subsp. *microcephala* Rech.f., *Calamagrostis arenaria* (L.) Roth (=*Ammophila arenaria* (L.) Link subsp. *arundinacea* H.Lindb.), *Anthemis tomentosa* L. subsp. *tomentosa*, *Centaurea spinosa* L., *Cyperus capitatus* Vand., *Thinopyrum elongatum* (Host) D.R.Dewey (=*Elymus elongatus* (Host) Runemark subsp. *elongatus*), *Eryngium maritimum* L., *Euphorbia paralias* L., *Glaucium flavum* Crantz, *Medicago marina* L., *Otanthus maritimus* (L.) Hoffmanns. & Link, *Pancratium maritimum* L., and *Polygonum maritimum* L..

Dune slack

Dune slacks are low areas that separate sand dunes, typically forming when a new dune ridge develops in front of a low-lying area cut off from the sea, or when a dune blowout occurs in an area with abundant vegetation, exposing a dip of bare sand. Where these low areas are low enough to meet the dune water table, freshwater pools can form, serving as excellent feeding and breeding grounds for dune wildlife. Areas of exposed sand in sand dunes can become dune blowouts, allowing for dune migration and dynamism as the bare sand is picked up by the wind and blown elsewhere in the dune system.

In depressions and flat areas, the following taxa can be found (Figure 4): *Aetheorhiza bulbosa* (L.) Cass. subsp. *microcephala* Rech.f., *Anthyllis hermanniae* L., *Asparagus acutifolius* L., *Avena barbata* Pott ex Link, *Blackstonia perfoliata* (L.) Huds., *Bromus tectorum* L., *Carlina corymbosa* L., *Cistus creticus* L., *Cynodon dactylon* (L.) Pers., *Dactylis glomerata* L. subsp. *hispanica* (Roth) Nyman, *Echium angustifolium* Mill., *Erodium cicutarium* (L.) L'Hér., *Eryngium campestre* L., *Fumana thymifolia* Spach, *Glaucium flavum* Crantz, *Helichrysum stoechas* (L.) Moench subsp. *barrelieri* (Ten.) Nyman, *Hypochaeris glabra* L., *Juncus acutus* L., *Lagurus ovatus* L., *Limonium oleifolium* Mill., *Lotus hirsutus* L., *Malcolmia flexuosa* (Sm.) Sm., *Medicago constricta* Durieu, *Onobrychis caput-galli* (L.) Lam., *Orobanche ramosa* L., *Otanthus maritimus* (L.) Hoffmanns. & Link, *Phragmites australis* (Cav.) Trin. ex Steud., *Pinus brutia* Ten. var. *brutia* (the trees here are very short (dwarfed) due to wind pressure.), *Pistacia lentiscus* L. (dwarf forms), *Rubia tenuifolia* d'Urv. subsp. *tenuifolia*, *Sarcopoterium spinosum* Spach, *Scirpoides holoschoenus* (L.) Soják, *Schoenus nigricans* L., *Teucrium polium* L., *Thymbra capitata* (L.) Cav., *Thymelaea tarton-raira* (L.) All., *Tragopogon porrifolius* L., *Festuca membranacea* (L.) Druce, and *Osyris alba* L..

Figure 4. *Pistacia lentiscus* and *Sarcopoterium spinosum* in dune slack

Mediterranean coniferous coastal dune forest (EUNIS Type Code: N1G)

The coastal dune forests in the Mediterranean and Aegean Basins are areas dominated by various pine species. In our research area, the pine species present is the Turkish pine (*Pinus brutia* Ten.) (Figure 5). It has been observed that this region has been afforested, and due to bidirectional wind pressure, the Turkish pine trees here remain very short and exhibit a flag-like appearance. As one moves further inland on the dune, the height of the trees increases. Behind the yellow dune ridges, the elevation gradually increases, leading to a lower, more stabilized dune area in the background. From the end of the dune area to the Turkish pine forests, the following taxa are observed: *Anthyllis hermanniae* L., *Bromus tectorum* L., *Carlina corymbosa* L., *Cistus creticus* L., *Thymbra capitata* (L.) Cav., *Dactylis glomerata* L. subsp. *hispanica* (Roth) Nyman, *Dittrichia viscosa* (L.) Greuter (=*Inula viscosa* (L.) Aiton), *Echium angustifolium* Mill., *Festuca fasciculata* Forssk. (=*Vulpia fasciculata* (Forssk.) Fritsch), *Fumana thymifolia* Spach, *Lotus hirsutus* L., *Medicago constricta* Durieu, *Osyris alba* L., *Pistacia lentiscus* L., *Quercus coccifera* L., *Rubia tenuifolia* d'Urv., and *Sarcopoterium spinosum* Spach.

Figure 5. Turkish Pine forests on the Mediterranean coastal dunes

Mediterraneo-Pontic sea-cliffs and rocky shores (EUNIS Type Code: N322)

The coastal areas of the Mediterranean and Aegean Seas include diverse structures such as surfaces, ridges, caves, rocky shores, and isolated rocky outcrops. These areas are important for harboring rare species. On the western cape, at the lower parts of the lighthouse and on the southwestern edge of the dune at about 30 meters high limestone cliffs, a few coastal plants can be found (
Figure **6**). The identified species are *Crithmum maritimum* L., *Frankenia hirsuta* L., *Lagurus ovatus* L., *Limonium oleifolium* Mill., *Mesembryanthemum nodiflorum* L., *Sarcopoterium spinosum* Spach, and *Silene sedoides* Poir..

Figure 6. The limestone cliffs on the southwestern slopes of the dune.

***Pinus brutia* forests (EUNIS Type Code: T3A5)**

The *Pinus brutia* Ten. forests occupy the regions found beyond the coastal dune fields. These forests, while being the ecological equivalents of the shorter red pine forests on the dunes, are typically characterized by taller, denser, and more extensive formations. This distinction highlights the significant contrast in forest structure and density between the coastal dune regions and the areas just inland. The name of the pine forest here is "Latif Pine Grove" (Figure 7). Apart from *Pinus brutia*, the species *Cistus creticus* L., *Cynodon dactylon* (L.) Pers., *Helichrysum stoechas* (L.) Moench subsp. *barrelieri* (Ten.) Nyman, *Juniperus oxycedrus* L., *Lagurus ovatus* L., and *Quercus coccifera* L. are also found densely in this forest area.

Figure 7. The Latif Pine Grove located behind the West Cape dune.

Fallow un-inundated fields with annual and perennial weed communities (EUNIS Type Code: V153)

In the southwestern part of the dune, there are abandoned agricultural fields on the deep limestone cliffs, in a small area between the dune and the Latif Pine Grove. These fields are not in use today, and there is restricted access due to Wind Turbines on the dune. Therefore, these empty fields are extensively used as an Observation Terrace by visitors, especially to watch the sunset.

The following species are found in the fallow field at this observation point: *Bromus tectorum* L., *Carlina corymbosa* L., *Cynodon dactylon* (L.) Pers., *Eryngium campestre* L., *Lagurus ovatus* L., *Limonium oleifolium* Mill., *Medicago constricta* Durieu, *Onobrychis caput-galli* (L.) Lam., *Sarcopoterium spinosum* Spach.

In this study for Bozcaada West Cape, a total of 3 ecosystems and 7 habitat types have been identified according to the EUNIS habitat classification system. These habitat types are hierarchically listed in the table below (Table 1):

Table 1: EUNIS habitat types of West Cape Dune in Bozcaada

EUNIS Habitat Code	EUNIS Habitat Name	Most Abundand Species	Area (km²)	Percentage (%)
	N-Coastal habitats			
N122	Unvegetated Mediterranean and Black Sea sand beaches above the driftline	Due to the mobility of the dune in this region, there are no living plant species present.	0.042	1.29
N141	Western Tethyan Embryonic dunes	*Thinopyrum junceum, Sporobolus virginicus, Euphorbia peplis, Otanthus maritimus, Medicago marina, Anthemis tomentosa, Eryngium maritimum, Pancratium maritimum, Cyperus capitatus*	1.000	30.53
N1B3	Dune sclerophyllous scrubs and thickets	*Anthyllis hermanniae, Calamagrostis arenaria, Centaurea spinosa, Euphorbia paralias, Pistacia lentiscus, Sarcopoterium spinosum, Thinopyrum junceum*	0.976	29.81
N1G	Mediterranean coniferous coastal dune forest	*Pinus brutia, Anthyllis hermanniae, Cistus creticus, Thymbra capitata, Lotus hirsutus, Osyris alba, Pistacia lentiscus, Quercus coccifera, Sarcopoterium spinosum*	0.962	29.37
N322	Mediterraneo-Pontic sea-cliffs and rocky shores	*Crithmum maritimum, Frankenia hirsute, Limonium oleifolium, Mesembryanthemum nodiflorum, Sarcopoterium spinosum, Silene sedoides*	0.054	1.63
	T- Forest and other wooded land			

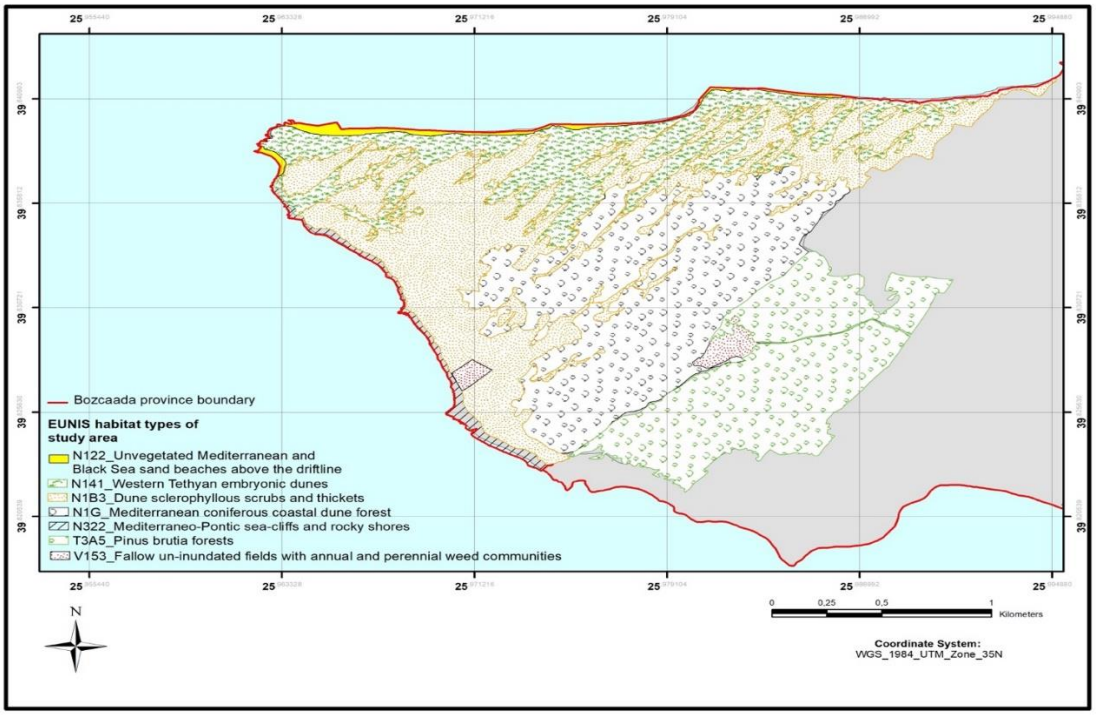
EUNIS Habitat Code	EUNIS Habitat Name	Most Abundand Species	Area (km^2)	Percentage (%)
	N-Coastal habitats			
T3A5	*Pinus brutia* forests	*Pinus brutia, Quercus coccifera, Juniperus oxycedrus*	0.202	6.16
	V- Vegetated man-made habitats			
V153	Fallow un-inundated fields with annual and perennial weed communities	*Bromus tectorum, Carlina corymbosa, Cynodon dactylon, Eryngium campestre, Sarcopoterium spinosum*	0.039	1.20
		TOPLAM	**3.275**	**100.00**

During the determination of EUNIS habitat types, the classification levels were established through a comprehensive analysis of available data and meticulous field observations, taking into account the specific criteria outlined in the classification system. The process resulted in the identification of seven distinct habitats within the study area.

Six of these habitats were classified at level 4, indicating a high level of specificity and detail in their characterization. These habitats likely exhibit unique ecological characteristics, supporting specialized flora and fauna communities. In contrast, one habitat was classified at level 3, suggesting a broader, more generalized habitat type that may encompass a wider range of ecological conditions.

This classification scheme provides a valuable framework for understanding the diversity and complexity of habitats within the region. Figure 8 illustrates the distribution and classification of these habitats, offering a visual representation of their spatial arrangement and relative abundance within the study area.

Figure 8. Map of EUNIS Habitat Classes of Bozcaada West Cape.



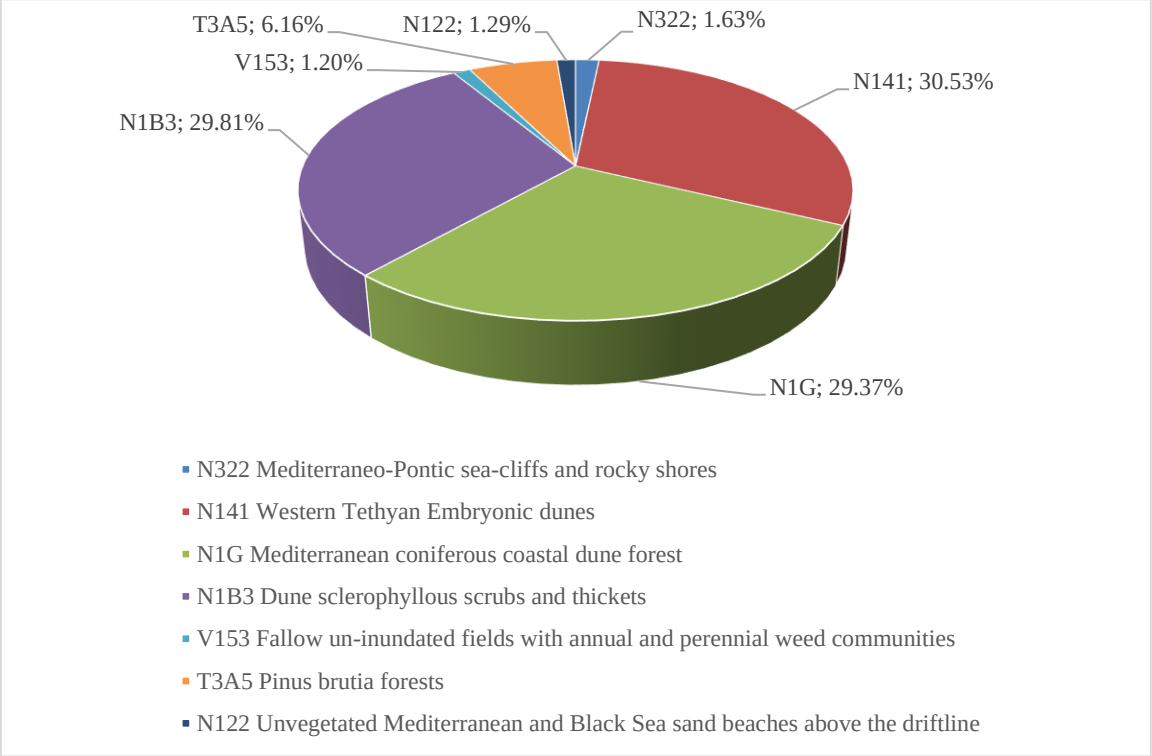
Upon examining the current EUNIS habitat map for Bozcaada West Cape resulting from our studies, it is evident that a significant portion of the study area is dominated by three main habitat types: N141, N1B3, and N1G. These habitats collectively cover approximately 90% of the area, highlighting their prevalence and ecological importance within the region.

The prevalence of N141, covering 30.53% of the area, suggests the presence of a specific habitat characteristic to this region. This habitat type may indicate the presence of unique ecological conditions or the dominance of certain plant or animal species that thrive in this environment. Further investigation into the ecological dynamics of N141 could provide valuable insights into the biodiversity and ecosystem functioning of the area.

Similarly, the widespread occurrence of N1B3 (29.81%) and N1G (29.37%) habitats indicates a uniformity or continuity in the ecological features of these areas. These habitats may represent transitional zones or ecotones between different habitat types, showcasing a diverse range of species and ecological interactions. Understanding the distribution and characteristics of these habitats is crucial for effective conservation and management strategies in the region.

Overall, the dominance of these three habitat types underscores the need for targeted conservation efforts to preserve the unique biodiversity and ecological integrity of Bozcaada West Cape. Further research and monitoring of these habitats are essential for developing sustainable management practices that ensure the long-term health and resilience of the region's ecosystems (Figure 9).

Figure 9. Proportional Distribution of Layers According to EUNIS Habitat Classification of Bozcaada West Cape



The main reason for the distribution of the dune ecosystems covering the study area is the high southwest-northeast wind activity, especially in this region (Yiğini and Ekinci, 2018). This area, where eolian parent material is observed, is covered with coastal sand dunes formed by the sea and the wind carrying terrestrial sediments (Yiğini, 2014). The study area, West Cape, has a shoreline surrounded by low (1-2 m) sea cliffs

and rocky ridges consisting of Miocene limestone **(**Akbaş and Taşlı, 2019**)**. Towards the eastern part of the dune area, relatively stable dunes are present. The area terminates with a forest area containing *Pinus brutia* developed on the bedrock (Avcıoğlu et al., 2015). The West Cape location is quite important in terms of its bilateral composition and is unique in our country **(**Akbaş and Taşlı, 2019**)**.

In terms of biological diversity in Çanakkale province, one of the areas that requires monitoring at the habitat level is the sand dunes of Bozcaada West Cape. This is because the study area, with 58 species from 55 genera and 27 families (Karabacak et al., 2008), has a rich plant community and is considered one of Turkey's 122 Important Plant Areas **(**Akbaş and Taşlı, 2019**)**. This floristic diversity contributes significantly to the region's flora. Successfully characterizing and evaluating the plant communities here has the potential to make a significant contribution to monitoring and conservation efforts. Therefore, in this study, we used the EUNIS habitat classification system to evaluate the coastal sand dunes and their habitats in Bozcaada West Cape, the westernmost point of Turkey, and created an EUNIS habitat map. This study is of great importance as part of efforts to conserve the biological diversity of coastal sand dune ecosystems and ensure their sustainable management.

The study area is an important natural area in Bozcaada in terms of both biological diversity and social activities. A wind power plant was established in 2000 on the western cape, which receives the most wind on the island, for electricity generation purposes. To prevent damage from tourists visiting for tourism purposes, the area is fenced with wire mesh. Additionally, this part of the island is under strict protection (Anonymus, 2022). Therefore, apart from the litter washed ashore by the sea waves, there is minimal human impact. Determining the EUNIS habitat types for this area, which covers approximately 7% of Bozcaada, is crucial for contributing to the decision-making process regarding nature conservation, monitoring, and land use.

This study conducted the first determination of habitat codes for the Bozcaada West Cape dunes according to EUNIS and created a habitat map using ArcGIS software. The study is unique in its integration of fieldwork and literature review to align with the European Habitat Classification system, making it a valuable resource for future research and conservation efforts.

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