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Flora and vegetation of the European-network "Natura 2000" habitats of Naxos island (GR4220014) and of nearby islets Mikres Kyklades (GR4220013), Central Aegean (Greece)

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Abstract
Vegetation of the European-network 'Natura 2000' conservation areas of Naxos island and of nearby islets Mikres Kyklades, including calcareous rocky slope, maquis, phrygana, coastal cliff, dune, marshland, wet meadow, reed bed and aquatic habitats, was studied during 2000. The flora of the investigated regions consists of 365 taxa belonging to 78 families and 247 genera, some of which are endemic or rare in Greece. The majority of the represented in the life form spectrum taxa are Therophytes, Hemicryptophytes, Geophytes and Chamaephytes. From a chorological point of view, the Mediterranean element outweighs the rest, followed by the most diverse group of widespread taxa. The macrophytic vegetation was analysed following the Braun-Blanquet method. Twenty nine plant communities-among them one described for the first time (*Theligono cynocrambis-Parietarietum lusitanicae*), belonging to nineteen alliances, eighteen orders and fifteen phytosociological classes, were found. The distinguished vegetation units are described, presented in phytosociological tables and compared with similar communities from other Mediterranean countries. In the study area seventeen habitat types were delimited through the assessment of the dominant vegetation types, of which fifteen are listed in Annex I of the 92/43/EU Habitats Directive and two (934A, 1260) are additional Hellenic habitat types (not included in the Directive). Among them three (1150, 2250, 3170) are considered as priority habitat types, while the Hellenic habitat type 1260 is considered as rare in the Natura 2000 sites of Greece.

Key words: flora, Greece, habitat types, insular ecosystems, vegetation.

Introduction

The aim of the current study is to provide an inventory of the flora, vegetation and habitat types encountered in the Natura 2000 conservation areas GR4220014 (Kentriki Kai Notia Naxos: Zas Kai Vigla Eos Mavrovouni Kai Thalassia Zoni (Ormos Karades - Ormos Moutsounas) and GR4220013 (Mikres Kyklades: Irakleia, Schoinoussa, Koufonisia, Keros, Antikeria Kai Thalassia Zoni) (Fig. 1). The island of Naxos and the nearby islets Mikres Kiklades belong to the insular group of Kiklades which according to the phytogeographical subdivision of the Aegean area established by Rechinger (1943) and the floristic division of Greece adopted for the Flora Hellenica (Strid 1996) is a floristically different blog of islands, distinctly separated from the regions distinguished to the west, south and east. Rechinger (1943) pointed out clearly that Kiklades are phytogeographically distinct from the East Aegean Islands. Furthermore, Runemark (1970) recognized the complete phytogeographical isolation of most central Aegean islands for a very long time, adopting that the central Aegean archipelago is the remains of a land bridge between southern Greece and western Turkey, which was submerged at the beginning of Pleistocene. Strid (1996) proposed the name "Rechinger's line" to be used for the interval between Kiklades and the East Aegean Islands, which in fact constitutes the phytogeographical borderline between Europe and Asia.

Kiklades have attracted the interest of botanists for many years and are one of the best known areas of Greece from a floristic and phytogeographical point of view. Nowadays, a large amount of floristic (Greuter *et al*., 1976; Raus, 1996, 2012; Browicz, 1997; Biel, 2005; Snogerup *et al*., 2006; Kougioumoutzis *et al*., 2012;) and at a lower extent of phytosociological data (Tsiourlis *et al*., 2007, 2009; Bergmeier *et al*., 2011) concerning these islands, is available. These data also include many rare, Greek endemic, regional endemic, single island endemic (Dimopoulos *et al*., 2013, Iliadou *et al*., 2014), vulnerable and threatened species (Phitos *et al*., 2009).

Bibliographic reports on plants from the study areas mainly issue from the extensive Rechinger's work (1943, 1950, 1951), in which former records mentioned by Halácsy (1900-1904; 1908; 1912) are also included. Related information regarding the islands of interest are scattered in some more recent publications as well (Karavokyrou & Tzanoudakis, 1991; Paulus & Gack, 1992; Koumpli & Yannitsaros, 1993; Turland *et al*., 1993; Kretzschmar & Kretzschmar, 1996; Delforge *et al*., 1998; Rückbrodt *et al*., 1998; Seiser, 2002; Langagen, 2004). Böhling (1995, 1997) studied thorou-

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ghly the flora of Naxos and revealed 56 floristically interesting species, among which *Bonannia graeca* (L.) Halácsy, rediscovered in Greece after more than 85 years.

Study area

Locations

The site "Mikres Kyklades: Irakleia, Schoinoussa, Koufonisia, Keros, Antikeria Kai Thalassia Zoni" (GR4220013) is a group of rocky and relatively bare islets south-southeast of Naxos island (E 25°58'9" N 36°92'6") that occupies a total area of 126 Km^2. The islands of Iraklia, Keros, Schinousa, Ano Koufonisi and Kato Koufonisi are the larger in size, while the highest peak of 418 m is found on the islands of Iraklia The site hosts endemic species of flora (Diapoulis, 1961; Runemark *et al*., 1960; Runemark, 1968; Krendl, 1986; Turland *et al*., 1993) and fauna and it is also important for migratory birds (Karandinos, 1992). The whole island complex has a low number of inhabitants but during the past several years activities in the touristic field have been increasingly developed.

The site "Kentriki Kai Notia Naxos: Zas Kai Vigla Eos Mavrovouni Kai Thalassia Zoni (Ormos Karades - Ormos Moutsounas)" (GR4220014), covers an area of approximately 87 Km^2 and includes a montane zone running the island from north to south. It also covers the coastal area from Vigla to the west side up to Moutsouna at the east side of the island (E 25°46'0" N 36°94'7"). The passes between the highest mountains (900 - 1000 m) are all 600 or more meters wide and the lower end, near the southernmost tip, reaches 420 m. The rocky mountainous area of the site is mainly covered by low phrygana and high or mesic maquis vegetation. Throughout the area, there are many narrow intermittent streams, springs and wells. In the coastal area of the site, there is a wide variety of alternating habitats such as small lagoons, mud flats, sea cliffs, sandy beaches, rocky shores, shingle beaches with perennial plants and sand dunes. The great variety of habitat types in combination with the high diversity of flora and fauna make the whole area one of the most important sites in the central Aegean Sea (Dafis *et al*., 1996). Parts of the site have also been characterized as a special protection area (SPA) under the European Union Directive on the Conservation of Wild Birds (2009).

Geology

The islands of Naxos and the Mikres Kiklades belong to a polyphase complex mainly composed of metamorphic and plutonic rocks. These crystalline rocks of Central Aegean have been summarized under the term "Attic-Cycladic massif", which is overlain by Neogene and Pleistocene sedimentary rocks (Hejl *et al*., 2003; Urai *et al*., 1990).

The shoreline of Naxos mainly consists of concaved beach zones separated by small headlands. Some of the coastal plains, as in Agiassos and Kalandos, are composed largely of Quaternary alluvia. According to Evelpidou *et al*. (2012) during Late Holocene the embayments of western coastal part of the island did not communicate with sea and were frequently exposed. The coastal area was wider with many active lagoons and embayment, changing from shallow marine to

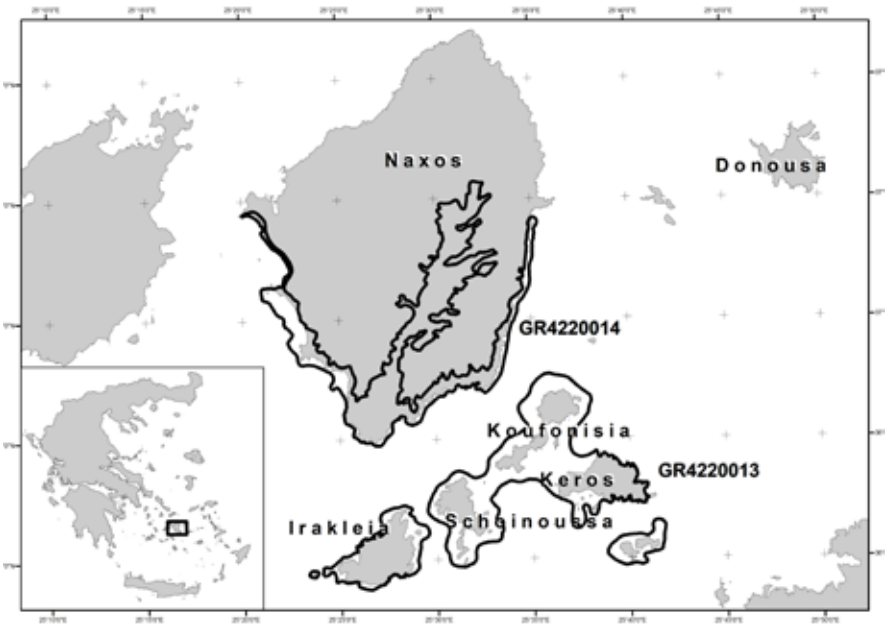

Fig. 1 - Study area: the two Natura 2000 sites and their location in Greece.

coastal environment. In addition, there was frequently an alternation to brackish mesohaline one. The former sea-level position in the western part of the island must have been between 1.5 m and 2 m during the last 2000 years, which may partly reflect eustatic processes and a gradual or coseismic land subsidence. The western region of the island is dominated by a peneplain situated at a mean height of 230 m, between the town of Naxos and the valley of Melanes. In a very similar way, the south-eastern extension of the peneplain also dominates the landscape of "Tragea' (Hejl *et al*., 2003). Büdel (1965, 1977) and Louis (1967) have mentioned that the morphological style of Naxos demonstrates a broad similarity to the current peneplains in the semi humid tropics. The weathering basal relief of Naxos peneplain has been mainly exhumed since its genesis. Sediments provided by the denudation of tropical weathering material are preserved at the bottom of flat floored valleys. Remnants of a younger coastal pediment are preserved to the S of Galanado. On the basis of climato-eomorphological arguments, Riedl (1984) has proposed an Upper Miocene or Lower Pliocene age for Naxos' peneplain. The assumption of a marginal tropical climate of that period is supported by palaeoecological investigations (Thunnell & Williams, 1983; Velitzelos & Zouros, 1998).

Climate

According to the xerothermic index (x) introduced by Bagnouls & Gaussen (1953) and as Tselepidakis & Theocharatos (1989) concluded, Kiklades islands are in the zone of the accentuated thermomediterranean climate, where the mean number of dry days per year varies from 125 to 150. The use of xerothermic index besides temperature and precipitation gives better results for the calculation of the dry period. The xerothermic index reflects the intensity of this period in a given region and represents the total number of biologically dry days of the dry months which are defined by the ombrothermic diagram of the region. Based on Emberger's (1955, 1959) and Sauvage's (1963) climatic classifications, the meteorological station of Naxos belongs to the semi-arid bioclimatic zone.

Materials and Methods

The floristic, phytosociological and habitat records given in the present study are based on data collected during the spring and summer of 2000 within the framework of the Natura 2000 Vegetation and Habitat Identification and Mapping project. For the study of the flora, 506 plant specimens were collected and identified in the Institute of Systematic Botany, University of Athens. To determine the plant material, Tutin *et al*. (1968-80, 1993) was mainly used, but Davis (1965-85) and Strid & Tan (1997, 2002) were also consulted. The taxonomy and nomenclature of taxa follows Dimopoulos *et al*. (2013). It must be clarified here that the provided list is not the result of a complete floristic investigation of the area but the outcome of the phytosociological relevés and some field observations. Lifeform classification is according to Raunkiaer (1934) and Ellenberg & Mueller-Dombois (1967). For the chorological types, the 'Greece-centered' system established by Dimopoulos *et al*. (2013) was used.

For the description and mapping of the prevailing vegetation units, 132 relevés (vegetation sample plots) were made in the field according to the Braun-Blanquet method (Westhoff & Van der Maarel 1980; Kent & Coker, 1992) (see also Fig 1 and Appendix 2). The cover-abundance degree was estimated by using the extended (9-point) Braun-Blanquet scale (Barkman *et al*., 1964). The collected vegetation samples (relevés) were subsequently elaborated according to the synthetic approach proposed by Knapp (1958) and Ellenberg (1956). This approach leads to the distinction of the community types and to their final classification into higher syntaxonomic units. Diagnostic-taxa (character-species, differential species, constant companions) were found and a syntaxonomic interpretation was attained. Vegetation units were defined based on an assessment of species fidelity and are given in phytosociological tables (Tab. 2-14) Syntaxonomic nomenclature is mainly based on Géhu *et al*. (1990), Brullo *et al*. (1997; 2004), Mucina (1997), Brullo & Minisale (1998), Rivas-Martínez *et al*. (2001; 2002; 2011), Díez-Garretas *et al*. (2003), Sýkora *et al*. (2003), Biondi (2007), Mucina *et al*. (2009), Asensi & Díez-Garretas (2011), Bergmeier *et al*. (2011), Dimopoulos *et al*. (2013), Biondi & Galdenzi (2014). It should be mentioned that the aim of the current study is not to describe new phytosociological types but rather to offer a tool for detecting, describing and eventually monitoring the Annex I habitats type with the use of plant communities. For this reason the reported vegetation types are mostly described as plant communities, without reaching a detailed definition at the association level limiting the phytosociological interpretation at the alliance level.

The delimitation and classification of habitats were achieved through the evaluation of the dominant vegetation types and their diagnostic species, as described in Lavrentiades (1964, 1971), Horvat *et al*. (1974), Babalonas (1979), Grabherr & Mucina (1993), Mucina *et al*. (1993), Dimopoulos *et al*. (1995), and Sýkora *et al*. (2003). The coding of the distinct habitats follows Dafis *et al*. (1999, 2001), the Interpretation Manual of EU Habitat types (2007, 2013) and Dimopoulos *et al*., (2006).

In order to perform data analysis, Braun-Blanquet cover abundance values were transformed so as to be treated as if they were metric, based on the idea first

published by Van Der Maarel (1979a). As proposed by Wildi (2010) the Braun-Blanquet code was first transformed into a proper rank scale with a range from 0 to 6. The rank scale was further transformed according to $x' = x^y$, where x' is the transformed score. Due to the presence of several accidental (see also Appendix 3) and non-typical species ('other species'), y was set to 4 so as to suppress low scores (Wildi 2010).

Hierarchical clustering of the total of 132 transformed phytosociological relevés was performed by using the "vegan" package in the R statistical environment (R Development Core Team 2012), following the analysis described in Oksanen (2013) and Oksanen *et al.* (2013). Three agglomerative clustering methods have been tested: single, complete and average linkage clustering. Cophenetic correlation was used to measure the similarity between original dissimilarities and dissimilarities estimated from the tree produced by each clustering method. Average linkage (UPGMA) method maximizes the cophenetic correlation.

Results and Discussion

Flora

The vascular flora of the investigated sites includes 365 taxa (350 species and 15 subspecies) of 247 genera and 78 families (see Appendix 1). Among the families identified, *Poaceae* is the most diverse (48 taxa), followed by *Fabaceae* (46 taxa), *Asteraceae* (45 taxa), *Apiaceae* (20 taxa), *Caryophyllaceae* (18 taxa) and *Brassicaceae* (13 taxa). Only six of the species found in the study areas are *Pteridophyta*, while the rest are all *Spermatophyta*. Twelve taxa are of special chorological interest (Strid & Tan 1997; 2002, Dimopoulos *et al.*, 2013) and are preceded by an asterisk in the plant list and commented below:

-*Hymenonema graecum*: Endemic to S. Aegean region (Sell, 1976), known only from the Kiklades. Its presence in Kasos and Kriti is rather questionable. It occurs in coastal habitats, roadsides and stony places.

- *Filago cretensis*: This species is an Aegean Islands endemic, occurring in xeric Mediterranean phrygana and grasslands.

- *Limonium graecum*: This species was widely distributed in the study area but in Greece it is known solely from Kiklades and the East Aegean Islands. It was encountered in Ano Koufonisi, Kato Koufonisi and Keros islands on coastal cliffs sprayed by seawater and in dune thickets with J*uniperus macrocarpa* in Naxos.

- *Dianthus cinnamoneus* subsp. *cinnamoneus*: Greek endemic subspecies that occurs on limestone cliffs and rocky or gravelly places in phrygana, on calcareous and siliceous substrates. Previous Greek records of this taxon are from Kiklades, Kasos and Kriti. This taxon was observed in Naxos on gravelly areas vegetated by phrygana consisting of *Sarcopoterium spinosum*, *Helichrysum stoechas* subsp. *barrelieri* and *Genista acanthoclada*.

- *Staehelina fruticosa*: A Greek endemic species, recorded only from Kiklades, Kriti, Kasos and the East Aegean Islands. It is a typical representative of chasmophytic vegetation that occurs on rock faces, calcareous cliffs, fissures, walls, ravines and boulders.

- *Silene sartorii*: Greek endemic species, mainly distributed in the Kiklades, just reaching coasts of easternmost Attiki and Argolis Peninsula. It prefers gravelly seashores and it rarely occurs in open flats and fallow fields further inland. In the study area the species was associated with communities of the *Euphorbio paraliae-Ammophiletea australis* class established on sand-dunes along the western coastline of Naxos.

- *Leontodon graecus*: Endemic to Greece scattered throughout Ionian and Greek Aegean archipelagos except of Kriti and Kasos. It is fairly distributed in mainland but absent from Northern Pindos, North Central and North East. It dwells at dry and mesic meadows and pastures, rock outcrops and stony ground, forest edges and grassy non-ruderal verges. In the investigated area, this species was encountered in calcareous cliffs of mountain Zefs in Naxos.

- *Aethionema saxatile* subsp. *creticum*: Greek endemic subspecies scattered in Kriti, Kiklades, East Aegean Islands, SE Peloponnisos and Kithira. It occurs in rocky limestone slopes, calcareous cliffs and in xeric Mediterranean phrygana and grasslands.

- *Arenaria aegaea*: It is an Aegean Islands endemic species that prefers maritime limestone rocks, mainly on islets, more rarely on larger islands of the Kiklades and the East Aegean. It also occurs in Peloponnisos, Kasos and small islands north of Kriti but it is absent from Kriti itself. According to Strid & Tan (1997) *A. aegaea* is closely related to *Arenaria leptoclados* (Rchb.) Guss. and may represent a maritime ecotype of it.

- *Tordylium hirtocarpum*: Known from Kiklades, Kriti, Kasos and the East Aegean Islands. It occurs in Mediterranean dwarf shrub formations and in annual-rich communities of pastures and lowland screes.

- *Umbilicus parviflorus*: Rare in Greece, scattered in Kiklades, Kriti, Kasos and the East Aegean Islands on limestone cliffs, rocks, walls, ravines and boulders.

- *Callitriche brutia*: Rare in Greece. Notes on its presence are given by Sarika-Hatzinikolaou *et al.* (1996). Its distribution range in Greek Aegean Islands includes Naxos (Böhling 1995), where the species was found in a dried up temporary pond (Mt Zefs, alt. 470 m).

The biological spectrum (Fig. 2) reveals the predominance of Therophytes (187 taxa), which are followed by Hemicryptophytes (63 taxa), Geophytes (46 taxa), and Chamaephytes (43 taxa). Phanerophytes (21 taxa) are also well represented whereas Aquatics (3 taxa) occur in a very low percentage. The high percentage of Therophytes in the study area is in accordance with its

bio-climatological position (semi-arid with an intense thermo-Mediterranean character) and with literature data demonstrating Therophytes as predominant life form in the Mediterranean coastal and insular ecosystems (García *et al*., 1993; Panitsa *et al*., 2003; 2004; Sarika, 2012). It is widely accepted that the predominance of Therophytes in the above mentioned ecosystems seems to be related not only to the climate but also to the mismanagement and degradation of the natural habitats and it is usually considered as an indicator of disturbances (Arianoutsou & Margaris, 1981, Barbero *et al*., 1990, Panitsa *et al*., 1994, Panitsa & Tzanoudakis, 1998, Panitsa *et al*., 2003; etc). It is also well known that the presence of phryganic or maquis communities dominated by *Sarcopoterium spinosum* and *Quercus coccifera* respectively, which thrive in our areas, is indicative of former agricultural activities and of cutting or burning events (Economidou, 1976; Vlachos, 2006).

The chorological spectrum (Fig. 3) shows the Mediterranean element outweighing the rest. It represents the largest group, including 285 taxa (80%), 214 of which are Mediterranean (Mediterranean, E Mediterranean, Greek Endemic, Balkan, Balkan-Anatolian) and 71 Mediterranean-extra-Mediterranean (Mediterranean-Atlantic, Mediterranean-European and Mediterranean-SW Asian). The group of widespread taxa includes a great number of elements (European, Euro-Siberian, European-SW Asian, Cosmopolitan, Circumtemperate, Paleotemperate, Subtropical-Tropical [S-Afr.]) and it is represented by 68 taxa (20%).

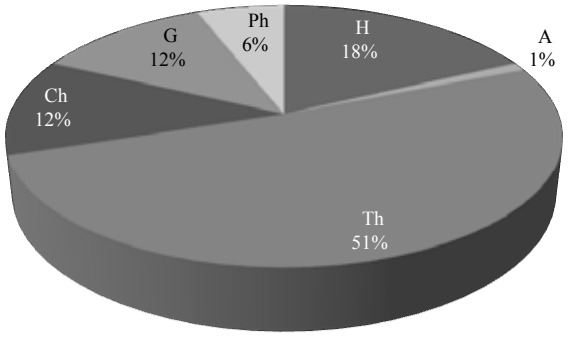

Fig. 2 - Biological spectrum of the investigated flora.

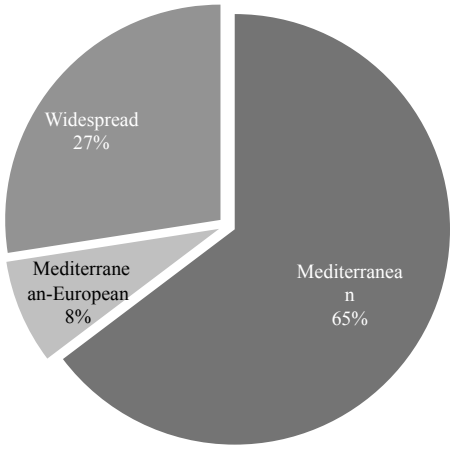

Fig. 3 - Chorological spectrum of the investigated flora.

Vegetation and Habitat types

The elaboration of data collected during the field vegetation analysis revealed 29 plant communities, that belong to the following classes: *Asplenietea trichomanis*, *Isoeto-Nano-Juncetea*, *Quercetea ilicis*, *Cisto-Micromerietea julianae*, *Nerio-Tamaricetea*, *Crithmo-Staticetea*, *Stellarietea mediae*, *Cakiletea maritimae*, *Euphorbio paraliae-Ammophiletea australis*, *Thero-Brachypodietea*, *Sarcocornietea fruticosae*, *Juncetea maritimi*, *Phragmito-Magno-Caricetea*, *Potametea* and *Ruppietea* (see syntaxonomical scheme). From the delimitation and classification of habitats, seventeen different types were recognized, fifteen of which are included in Annex I of the Directive 92/43/EU, while 1260 named "sublittoral zone of the islets of the Aegean" and 934A named "Greek *Quercus coccifera* woods" corresponds to Greek habitat types.

On the basis of distribution categories, responsibility criteria and threats as they are proposed by Dimopoulos *et al*., (2006) ten of the detected habitat types (1260, 2120, 2230, 2250, 3170, 5210, 5420, 8210, 92DO, 934A) are of high, six (1150, 1210, 1240, 1410, 1420, 2110) of medium and one (1130) of low monitoring importance. Among them there are rare (2230, 1260), infrequent (2250) and scattered (1130, 1150, 1420, 2110, 3170) habitat types in Greek Natura 2000 sites, while the rest are widespread or abundant. In the text and in Table 1 the priority habitat types (1150, 2250, 3170) and the Hellenic ones (1260, 934A) are indicated by one or two asterisks respectively.

The Natura 2000 Special Area of Conservation (SAC) of Naxos was the most diverse in vegetation units and habitat types, hosting twenty one plant communities and eleven of the recognized habitat types. The lower number of plant communities (16) and of habitat types (9) recognized in Natura 2000 SAC GR4220013 was rather expected due to the territorial discontinuity of the area, which consists of small islands. The most frequent vegetation type encountered all over the investigated sites, was the one corresponding to habitat code 1240 (vegetated sea cliffs of the Mediterranean coasts), followed by the phryganic formations (habitat code 5420), which were the dominant vegetation type in many of the study areas as well as the most diverse in plant communities (Tab. 1). Large areas of the investigated islands were covered by a mosaic of

phrygana and maquis communities, alternately distributed, expanding from sea level to inland sites of higher elevation.

From a total of 132 relevés registered during the field work, 58 were carried out on phrygana (33 relevés) and maquis (25 relevés). Most of the remaining 74 relevés derive from sites near the sea (strandline zone, coastal sands, coastal wetlands, sea cliffs) while few originate from sites far off the coasts (calcareous rocky slopes, ravines, temporary ponds). All relevés were processed as described above for the construction of the dendrogram (Fig. 4). The 132 relevés used in the analysis were grouped into 8 large groups (clusters) each one of them is illustrated by an alphabetic letter. The cophenetic coefficient associated on the dendrogram, has a value of 0.918.

The first two of these clusters include the aquatic and Mediterranean semi-aquatic vegetation belonging to the classes *Potametea* and *Ruppietea* (cluster a) and to the class *Isoeto-Nano-Juncetea* (cluster b). More precisely, the first cluster (a) includes submerged monotypic communities consisting of *Stuckenia pectinata* or *Ruppia maritima*, while the second one (b) corresponds to *Callitriche brutia* community which is amongst the most commonly observed vegetation units of *Isoeto-Nano-Juncetea* in Greek temporary ponds. The third cluster (c) contains the communities that thrive on sandy soils near the sea and belong to the classes *Euphorbio paraliae-Ammophiletea australis* and *Thero-Brachypodietea*. The communities of the coastal wetland areas assigned to the classes *Sarcocornietea fruticosae*, *Phragmito-Magno-Caricetea* and *Juncetea maritimi* are all grouped within the cluster (d). This cluster also includes the *Aeluropus littoralis* dominated relevés. In literature the diagnostic species of the communities that this taxon forms, usually belong to the class *Juncetea maritimi* but there are cases in which they belong to *Sarcocornietea fruticosae*, *Festuco-Puccinellietea* or *Thero-Brachypodietea*. In our case this community mainly consists of species belonging to *Thero-Brachypodietea*, *Saginetea maritimae* and *Euphorbio paraliae-Ammophiletea australis*. The fifth cluster (e) includes the chasmophytic vegetation of the class *Asplenietea trichomanis* that occurs on calcareous rocky slopes of the interior vegetation zone (alt. 250-350 m.). The next cluster (f) contains the communities of Thermo-Mediterranean riparian galleries, assigned to the class *Nerio-Tamaricetea*, which were dominated by *Nerium oleander* and *Vitex agnus castus*. The following cluster (g) groups phrygana and maquis communities, emphasizing their affinities in terms of altitudinal and petrologic gradients. The last cluster (h) corresponds to the vegetation of maritime calcareous rocks and vertical cliffs of the littoral or su-

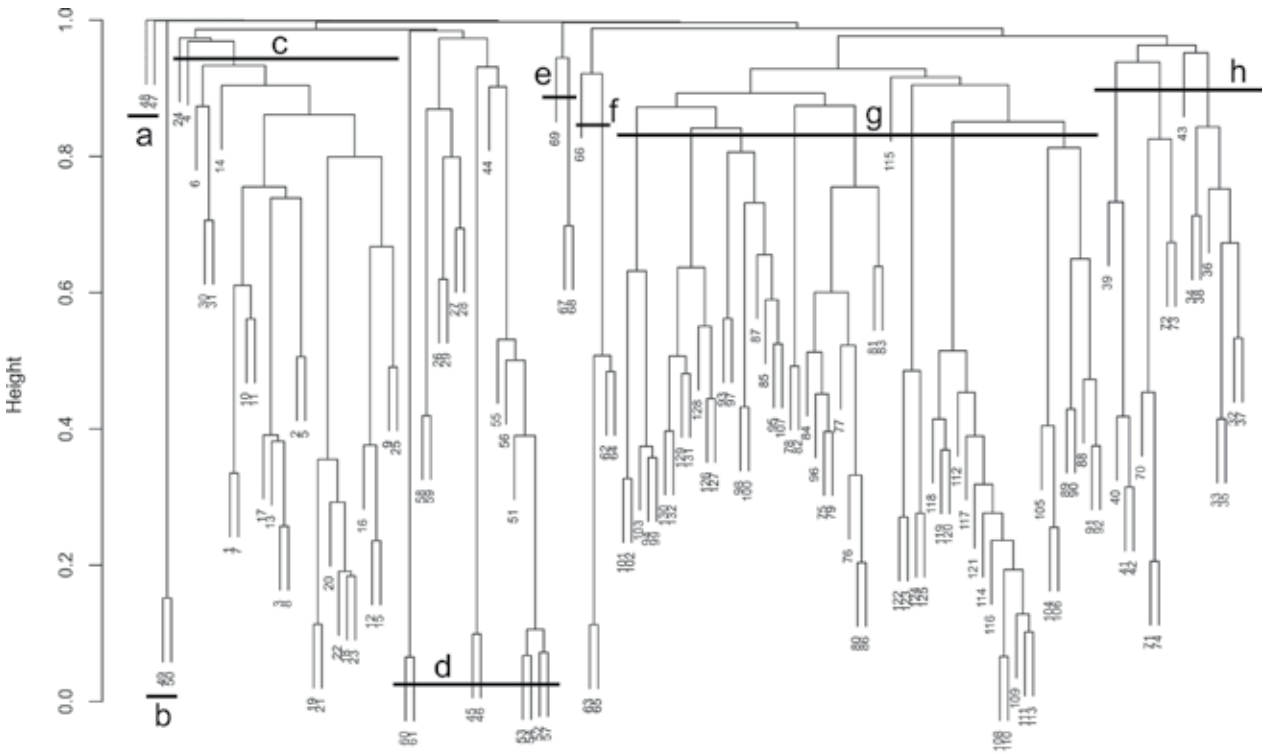

Fig. 4 - Dendrogram of the 132 relevés collected in the study area. The eight different letters (a-h) represent different clusters based on the results of hierarchical clustering.

Tab. 1 - Classification of the distinguished vegetation units into habitat types according to directive 92/43/EU and Dimopoulos *et al*., (2006). Abbreviations are: Na (Naxos), Ir (Iraklia), Sh (Schinousa), AK (Ano Koufonisi), KK (Kato Koufonisi), Ke (Keros).

Table 1

Habitat types and vegetation units	Na	Ir	Sh	AK	KK	Ke	Gl
Aeluropus littoralis community	+						
Calcareous rocky slopes with chasmophytic vegetation (8210)							
Scrophularia heterophylla community		+					
Staehelina fruticosa community		+					
Mediterranean temporary ponds (3170*)							
Callitriche brutia community	+						
Mediterranean sclerophyllous shrublands (maquis) (2250*, 5210, 934A**)							
Pistacio lentisci-Juniperetum phoeniceae	+	+			+	+	
Pistacio lentisci-Juniperetum macrocarpae	+						
Rhamno lycioidis-Quercetum cocciferae	+						
Dwarf shrub communities with *Sarcopoterium spinosum* (5420)							
Thymbra capitata community	+		+	+	+	+	
Genista acanthoclada-Sarcopoterium spinosum community	+	+	+	+			
Erica manipuliflora-Thymbra capitata community	+	+		+		+	
Cistus salvifolius-Cistus parviflorus community		+	+		+		
Sarcopoterium spinosum community	+	+					
Thermo-Mediterranean riparian galleries (92D0)							
Nerium oleander-Vitex agnus castus community	+						
Vegetated sea cliffs of the Mediterranean coasts (1240)							
Frankenia hirsuta-Limonium graecum community			+	+	+	+	+
Limonio-Cichorietum spinosi	+	+					
Sublitoral zone of the islets of the Aegean (1260**)							
Theligono cynocrambis-Parietarietum lusitanicae						+	
Mesebrianthemum nodiflorum community			+				
Annual vegetation of drift lines (1210)							
Cakile maritima community			+				
Embryonic shifting dunes (2110)							
Cypero mucronati-Agropyretum juncei	+	+	+	+			
Shifting dunes along the shorline with *Ammophila arenaria* (2120)							
Medicagini marinae-Ammophiletum australis	+						
Medicago marina-Ononis variegata community	+	+					
Malcolmietalia dune grasslands (2230)							
Matthiola tricuspidata-Pseudorlaya pumila community				+			
Mediterranean and thermo-Atlantic halophilous scrub (1420)							
Suaedetum verae	+						
Sarcocornia perennis-Halimione portulacoides community	+						
Mediterranean salt meadows (1410)							
Juncus heldreichianus community	+						
Estuaries (1130)							
Phragmites australis community	+						
Schoenoplectus littoralis community	+						
Ruppietum maritimae	+						
Lagoons (1150*)							
Potamogetonetum pectinati	+						

pralittoral (epilittoral) vegetation zone (alt. 0-100 m.) including halophytic communities of the class *Crithmo-Staticetea* as well as halo-subnitrophilous therophytic communities of the class *Stellarietea mediae*.

Descriptions of the distinguished habitat types and the associated plant communities are presented in the following paragraphs.

Calcareous rocky slopes with chasmophytic vegetation (habitat code: 8210)

In the study area, the rupiculous vegetation of the *Asplenietea trichomanis* was represented only by two distinct plant formations. Amongst the species found on calcareous fissures and cliffs of the investigated islands, *Staehelina fruticosa* and *Scrophularia heterophylla*, were the differential taxa of the distinguished plant communities (Tab. 2). The above mentioned species are listed as diagnostic of the order *Cirsietalia chamaepeuces* (Horvat *et al*., 1974; Dimopoulos *et al*., 1997) in which the vegetation of calcareous cliffs of the thermo- and mesomediterranean belts of the Aegean region (Greece and possibly western Turkey) is classified (Bergmeir *et al*., 2011). Three alliances of this order - the *Capparo-Amaricion tournefortii*, the *Asterion cretici* and the *Inulion heterolepidis* - which were finely described and validated by Bergmeir *et al*. (2011) are present in the Aegean area. The *Capparo-Amaricion tournefortii* encompasses plant communities of calcareous cliffs on the north and central Aegean islands (Bergmeir *et al*., 2011), the *Inulion heterolepidis* on the south Aegean islands (Horvat *et al*., 1974; Devillers *et al*., 1991; Panitsa & Tzanoudakis, 1998; Zervou, 2011) and the southwest coast of Turkey (Lovric & Rac, 1991) whilst the *Asterion cretici* is regarded as a Cretan endemic alliance (Dimopoulos *et al*., 1997). We consider the chasmophytic communities of the order *Cirsietalia chamaepeuces* found in the investigated islands possibly belong to the alliance *Capparo-Amaricion tournefortii* but their species poorness and the fact that the *Cirsio chamaepeuces-Scrophularietum heterophyllae* is the only association classified within the *Capparo-Amaracion tournefortii* to date limit their phytosociological interpretation at the order level.

Mediterranean sclerophyllous shrublands (maquis) (habitat codes: 2250*, 5210, 934A**)

The arborescent matorrals (shrublands) dominated by *Juniperus phoenicea* and *Pistacia lentiscus* (habitat code; 5210) (Tab. 3), the dune thickets with J*uniperus macrocarpa* (habitat code: 2250*) and the *Quercus coccifera* (habitat code: 934A**) stands that were encountered in the investigated areas (Tab. 4) belong to the class *Quercetea ilicis*, in which the Mediterranean sclerophyllous forests and maquis are included (Mucina, 1997, Dimopoulos *et al*., 2011). Within the *Quercetea ilicis*, Rivas-Martínez (1975) described the order *Pistacio lentisci-Rhamnetalia alaterni* from Spain, comprising in it the pre-forest vegetation of maquis. He diversified this syntaxon from the order *Quercetalia ilicis*, which as he suggested, comprises the immiscibly forest vegetation. This consideration is adopted in the present study. However, many researchers did not recognize the above mentioned syntaxonomical scheme and they still classify the maquis within the order *Quercetalia ilicis*.

Fig. 5 - Sites of the relevés of the habitat type Calacareous rocky slopes with chasmophytic vegetation (8210).

Sclerophyllous shrublands dominated by *Juniperus phoenicea* and/or *Pistacia lentiscus* are generally common in eastern Mediterranean region. Vegetation units with *Juniperus phoenicea* are frequently recorded in literature usually in the framework (bounds) of *Pistacia lentiscus* communities. Barbero & Quézel (1976) described from several littoral territories of central and southern Greece, the Sub-association *Oleo-Lentiscetum aegaeicum juniperetosum phoeniceae* considering that belongs to the alliance *Oleo-Ceratonion silique*. This type of vegetation which according to Rivas-Martínez (1975) is grouped in the order *Pistacio lentisci-Rhamnetalia alaterni*, was also reported from Sithonia (Pavlidis, 1976a) and from some islands of Southern Evoikos Gulf (Sarlis, 1981) and Saronikos Gulf (Vallianatou, 2005).

Georgiadis *et al*. (1990) recorded from the Strofilia Coastal Area (NW Peloponnisos) shrublands consi-

Tab. 2 - *Staehelina fruticosa* comm. (rels.1-2), *Scrophularia heterophylla* comm. (rel. 3), *Theligono cynocrambis-Parietarietum lusitanicae* (rels. 4-8).

Relevé N.	1	2		3	4	5	6	7	8	
Relevé N. (dendrogram of Fig. 4)	67	68		69	70	71	72	73	74	
Plot size (m^2)	10	10		10	10	10	10	10	10	
Total cover (%)	70	20		10	5	5	18	10	5	
Exposure	SSE	SSE		SSW	NW	WSW	WNW	WNW	WNW	
Slope (º)	6	6		6	6	3	3	3	3	
Species N.	1	6		7	7	13	16	15	9	
Character species of the associations										
Staehelina fruticosa	4	2a	V	.	.	.	.	.	.	.
Scrophularia heterophylla	.	+	III	1	.	.	.	.	.	.
Theligonum cynocrambe	.	.	.	r	1	1	+	.	.	III
Parietaria lusitanica	.	r	III	.	.	2m	+	2m	2m	IV
Character species of *Cirsietalia chamaepeauces*										
Selaginella denticulata	.	.	.	.	.	.	2a	2m	.	II
Parietaria cretica	.	.	.	+	.	.	.	.	.	.
Character species of *Asplenietea trichomanis*										
Asplenium ceterach	.	+	III	+	.	+	.	.	.	I
Melica minuta	.	.	.	.	.	.	.	.	r	I
Character species of *Geranio purpurei-Cardaminetalia hirsutae*										
Mercurialis annua	.	.	.	r	.	2m	.	2m	1	III
Valantia muralis	.	.	.	.	2m	2m	.	.	2m	III
Arenaria leptoclados	.	.	.	+	.	.	.	.	.	
Character species of *Stellarietea mediae*										
Euphorbia exigua	.	.	.	.	.	.	2m	+	.	II
Bromus sterilis	.	.	.	.	.	r	.	.	.	.
Erodium cicutarium	.	.	.	.	.	.	.	+	.	I
Erodium chium	.	.	.	.	.	.	.	r	.	I
Scandix pecten-veneris	.	.	.	.	.	r	.	.	.	I
Other species										
Valantia hispida	.	r	III	.	2m	2m	.	+	2m	IV
Allosorus acrosticus	.	1	III	.	.	+	1	+	1	IV
Tordylium hirtocarpum	.	.	.	.	.	+	r	r	.	III
Centaurea raphanina	.	.	.	.	.	+	+	r	.	III
Muscari commutatum	.	.	.	.	r	.	.	.	.	II
Catapodium rigidum	.	.	.	.	+	+	1	.	.	I
Micromeria nervosa	.	.	.	.	.	r	.	.	+	II
Drimia numidica	.	.	.	.	.	+	.	r	.	II
Asterolinon linum-stellatum	.	.	.	.	.	.	2m	+	.	II
Dactylis glomerata	.	.	.	.	.	.	2b	+	.	II
Crocus sp.							r	+	.	II
Thymbra capitata	.	.	.	.	.	.	r	r	.	II
N. of accidental species	0	0		1	2	0	4	0	4	

sting mainly of *Juniperus phoenicea* and *Pistacia lentiscus*. They indicated this vegetation type as a phase with *Juniperus phoenicea* of the *Oleo-Ceratonion silique* alliance. Panitsa (1997) demonstrated the subassociation *Ceratonio-Pistacietum lentisci juniperetosum phoeniceae* from some East Aegean islets and she classified the distinguished unit, which is also known from Evvia (Krause *et al*., 1963), within the alliance *Ceratonio-Rhamnion oleoidis*, order *Pistacio lentisci-Rhamnetalia alaterni*. Evergreen-sclerophyllous formations with *Juniperus phoenicea* and *Pistacia lentiscus* as dominant species are also known from uncultivated slopes of the island Antikithira (Tzanoudakis *et al*., 2006). Zervou (2011) cited from the island of Kalimnos a community with *Juniperus phoenicea* which was mainly encountered in inland sites of higher elevation and a phytocoenon with *Pistacia lentiscus* restricted in few wind exposed rocky coastal places. Finally, it must be noted that the association *Pistacio lentisci-Juniperetum phoeniceae* known from two Croatian islands (Trinajstić, 1987) and from the Dalmatian coasts (Kovačić *et al*., 2001), resembles significantly to *Juniperus phoenicea-Pistacia lentiscus* stands found in our relevés where the dominant species *Juniperus phoenicea* was constantly associated with *Pistacia lentiscus* (Tab. 3).

Juniperus macrocarpa thickets that inhabit sandy soils along the western shores of Naxos (Tab. 4) are amongst the most infrequent vegetation types on dunes and cliffs of the Mediterranean coasts and are both vulnerable and ecologically important. These habitats have been included in the European Union Habitats Directive as a priority type. They settle in an environment that has been traditionally seen as a place for socioeconomic development. During the last century, those coastal woodlands (sensu Tekke, 1993) have been almost destroyed or profoundly disturbed by urban development (building, road construction, tourism) and expansion of cultivated land.

Géhu *et al*. (1990a), Asensi *et al*. (2007) and Díez-Garretas & Asensi (2014) pointed out that several character species of *Quercetea ilicis*, especially of the order *Pistacio lentisci-Rhamnetalia alaterni*, participate in the formations of *Juniperus macrocarpa*. These diagnostic species are variously distributed from Gibraltar to Turkey in Europe, a fact that results to many geographic equivalents of *Juniperetum macrocarpae* communities. Géhu *et al*. (1989a) described the association *Rubio tenuifoliae-Juniperetum macrocarpae* from Rodos and Karpathos islands and considered it as the South Aegean endemic syntaxon equivalent to the above mentioned *Juniperetum macrocarpae* communities. Zervou (2011) mentioned a community with *Juniperus macrocarpa* from Kalimnos noting that it is a residual form of the *Rubio tenuifoliae-Juniperetum macrocarpae*. In our opinion, the *Pistacio lentisci-Juniperetum macrocarpae* and *Pistacio-Juniperetum macrocarpae* (order *Pistacio lentisci-Rhamnetalia alaterni*), reported from SE Sardinia (Mossa *et al*., 2000) and from southern Italy (Puglia region) (Di Pietro *et al*., 2009) respectively, seem quite similar to *Juniperus macrocarpa* stands found in the investigated areas. In our relevés *Juniperus macrocarpa* is always accompanied by *Pistacia lentiscus* and *Prasium majus*, both diagnostic of *Pistacio lentisci-Rhamnetalia alaterni*.

The stands of pre-forest Thermo-Mediterranean maquis with *Quercus coccifera* (Tab. 4) are characterized by the constant presence of *Prasium majus*, which is diagnostic of the order *Pistacio lentisci-Rhamnetalia alaterni*. In this phytocoenon, character species of *Cisto-Micromerietea julianae* and *Thero-Brachypodietea* are frequently and sometimes abundantly present. Well-developed *Quercus coccifera* communities were also reported from Antikithira, where *Quercus coccifera* was the dominant species in combination with *Calicotome villosa*, *Pistacia lentiscus* and *Thymbra capitata* (Tzanoudakis *et al*., 2006).

It is widely known that in the thermo-Mediterranean bioclimatic zone, to which the investigated area belongs, *Q. coccifera* is mainly related to the subassociation *quercetosum cocciferae* of the *Oleo-lentiscetum aegeicum* (Barbero & Quézel, 1976) while in the eu-Mediterranean zone it forms the *Querco cocciferae-Phillyreetum latifoliae* (southern Greece) and the *Coccifero-Carpinetum* (northern Greece) (Oberdorfer, 1948). Barbero & Quézel (1976) pointed out that besides the above groups, this species appears as an essential element of *Abies cephalonica* formations, up to the level of supra-Mediterranean zone. According to Tsiourlis *et al*. (2009) the shrublands with *Quercus coccifera* in Greece can be divided into two groups. The first group comprises the *Q. coccifera* shrublands of continental as well as insular Greece, apart from Kriti, while the second one comprises those of Kriti. They classified the first group under the association *Querco cocciferae-Pistacietum lentisci* and the second group under the *Rhamno lycioidis-Quercetum cocciferae*. In our opinion relevés 5-11 with *Quercus coccifera* in Tab. 4 are related to the association *Rhamno lycioidis-Quercetum cocciferae*, which is a considerably more arid association.

Quercus coccifera is the most common species of the Mediterranean maquis, thriving in a wide variety of often contrasting environments. It is able to grow in unfavourable soil conditions and under severe human pressure (Liakos & Moulopoulos, 1967). Overgrazing, wildfires and intense human activities are thought to be the main factors responsible for the predominance of the species across the region (Mavrommatis, 1980; Raus, 1980; Trabaud, 1987) due to its prodigious regenerative capacity that gives it a competitive advantage after cutting or fire events (Vlachos, 2006). Debazac

Tab. 3 - *Pistacio lentisci-Juniperetum phoeniceae* Trinajstić 1987 (rels. 1-14).

Relevé N.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
Relevé N. (dendrogram of Fig. 4)	108	109	110	111	112	113	114	115	116	117	118	119	120	121	
Plot size (m^2)	100	100	100	80	100	100	100	100	100	100	100	100	100	100	
Total cover (%)	100	95	100	100	100	100	95	95	100	100	95	75	60	90	
Exposure	WNW	WNW	W	NNE	SE	SE	0	E	E	NE	NNW	S	NE	NNW	
Slope (°)	2	2	2	1	0	2	1	3	1	0	0	0	0		
Species N.	10	10	11	11	16	14	16	10	25	29	21	21	31	21	
Character species of the associations															
Juniperus phoenicea	5	5	5	5	5	5	5	r	5	5	4	4	4	5	V
Pistacia lentiscus	2m	2b	2b	2m	+	2b	2m	5	2a	+	2b	2b		2b	V
Juniperus macrocarpa	.	.	.	.	.	.	.	.	.	.	.	.	.	1	I
Character species of *Pistacio lentisci-Rhamnetalia alaterni*															
Prasium majus	+	+	1	2m	1	2m	1	+	2m	1	1	2m	1	2b	V
Arisarum vulgare	2m	.	2m	.	.	.	2m	2m	.	.	.	.	.	.	II
Rubia tenuifolia	.	.	.	.	+	.	.	.	.	.	.	.	.	.	I
Character species of *Quercetea ilicis*	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Rhamnus lycioides subsp. oleoides	.	.	.	.	.	+	r		.	.	.	.	.	.	I
Calicotome villosa	.	.	.	.	.	.	.	.	.	.	.	+			I
Ephedra foeminea	.	.	.	.	.	.	.	.	.	.	.	.	.	2m	I
Asparagus acutifolius	.	.	.	.	.	.	.	.	.	.	.	.	.	r	I
Character species of *Cisto-Micromerietea julianae*															
Thymbra capitata	.	2b	.	2b	3	2a	+	.	+	2a	2a	.	.	+	IV
Teucrium brevifolium	.	.	1	.	2b	1	2b	.	.	.	.	.	.	2a	II
Drimia numidica	.	.	.	.	2m	1	1	2m		+	+	1	1	+	IV
Centaurea raphanina	.	.	.	1	1	+	1	.	r	.	+	r	.	.	III
Teucrium divaricatum	.	.	.	1	+	+	.	.	.	.	.	+	+	.	II
Genista acanthoclada	.	.	.	.	2a	.	.	.	.	.	.	.	.	.	I
Teucrium capitatum	.	.	.	1	2a	.	.	.	.	.	.	.	.	2b	I
Helichrysum stoechas subsp. barrelieri	.	.	.	r	1	.	.	.	.	.	.	+	.	2m	I
Cistus parviflorus	.	.	.	.	.	1	2a	.	.	.	.	.	.	.	I
Asparagus aphyllus	.	.	.		.	.	.	1	+	+	.	.	.	.	I
Fumana thymifolia	.	.	.	.	.	.	.	.	.	.	.	+	.	1	I
Cistus salvifolius	.	.	.	.	.	.	2m	.	.	.	.	.	.	.	I
Micromeria nervosa	.	.	.	1	.	.	.	.	.	1	.	.	.	.	I
Erica manipuliflora	.	.	.	.	4	+		.	.	.	.	.	.	.	I
Cistus creticus	.	.	.	.	.	.	.	.	.	.	.	.	.	2a	I
Carlina corymbosa	.	.	.	.	.	.	.	.	.	.	r	.	.	.	I
Fumana arabica	.	.	.	.	.	.	2m	.	.	.	.	.	.	.	I
Ballota acetabulosa	.	.	.	.	.	.	.	+	.	.	.	.	.	.	I
Anthyllis hermaniae	.	.	.	.	.	+	.	.	.	.	.	.	.	.	I
Character species of *Thero-Brachypodietea*															
Valantia hispida	1	+	1	.	.	.	.	.	.	1	+	1	.	.	II
Crucianella latifolia	.	.	.	.	.	.	.	.	+	1	r	.	.	.	I
Trifolium scabrum	.	.	.	.	.	.	.	.		+	1	.	.	r	I
Brachypodium distachyon	.	.	.	.	.	.	.	.	2b	1	1	1	2m	.	II
Trifolium campestre	.	.	.	.	.	.	.	.	r	.	r	.	.	.	I
Linum strictum	.	.	.	.	.	.	.	.		2m	.	1	1	.	I
Asterolinon linum-stellatum	1	+	1	.	.	.	.	.	.	.	.	.	.	.	I
Lagurus ovatus	.	.	.	.	.	.	.	.	.	.	1	.	.	.	I
Tuberaria guttata	.	.	.	.	.	.	.	.	.	1	.	.	1	+	I
Briza maxima	.	.	.	.	.	.	.	.	.	.	.	+	r	.	I
Urospermum picroides	.	.	.	.	.	.	.	.	.	.	.	.	+	.	I
Trifolium stellatum	.	.	.	.	.	.	.	.	r	.	+	.	+	.	I
Catapodium rigidum	.	.	.	.	.	.	.	.	.	.	1	.	.	.	I
Hypochaeris achyrophorus	.	.	.	.	.	.	.	.	.	+	.	1	.	.	I
Medicago coronata	.	.	.	.	.	.	.	.	.	1	.	.	r	.	I
Hippocrepis ciliata	.	.	.	.	.	.	.	.	.	.	r	.	.	r	I
Tordylium apulum	.	.	.	.	.	.	.	.	1	.	.	.	.	.	I
Euphorbia exigua	.	.	.	.	.	.	.	.	.	+	.	.	r	.	I
Silene colorata	.	.	.	.	.	.	.	.	.	r	.	.	.	.	I
Hedypnois rhagadioloides	.	.	.	.	.	.	.	.	.	+	.	.	+	.	I
Campanula erinus	.	.	.	.	.	.	.	.	.	r	.	.	.	.	I

Crupina crupinastrum	.	.	.	.	.	.	.	.	r	.	.	.	.	.	I
Bupleurum semicompositum	.	.	.	.	.	.	.	.	.	.	.	.	.	+	I
Medicaco littoralis	.	.	.	.	.	.	.	.	.		r	.	.	.	I
Plantago lagopus	.	.	.	.	.	.	.	.	.	2m	.	.	.	.	I
Tolpis umbellata	.	.	.	.	.	.	.	.	.	.	.	.	+	.	I
Onobrychis caput-galli	.	.	.	.	.	.	.	.	.	.	.	.	r	.	I
Other species															
Phagnalon rupestre subsp. graecum	+	+	+	.	.	.	.	+	r	.	.	.	.	2a	III
Aetheorhiza bulbosa	1	1	1	.	2m	.	1	.	.	.	+	.	.	.	II
Asphodelus ramosus	.	.	.	.		r	1	1	+	.	.	.	.		II
Dactylis glomerata	.	.	.	.	2a	.	.	.		1	.	1	.	+	II
Melica minuta	.	.	.	.	.	.	.	.	1	.	.	.	.	+	I
Bupleurum gracile	.	.	.	.	.	.	.	.	+	2m	.	+	1	.	II
Lagoecia cuminoides	.	.	.	.	.	.	.	.	2b	1	.	.	.	.	I
Daucus guttatus	.	.	.	.	.	.	.	.	+	2m	.	1	1	.	II
N. of accidental species	2	2	2	2	1	1	2	1	7	5	3	4	14	1	

Tab. 4 - *Pistacio lentisci-Juniperetum macrocarpae* Caneva, de Marco et Mossa 1981 (rels. 1-4), *Rhamno lycioidis-Quercetum coccifera*e Br.-Bl. et Bolòs 1954 (rels. 5-11).

Relevé N.	1	2	3	4		5	6	7	8	9	10	11	
Relevé N. (dendrogram of Fig. 4)	122	123	124	125		126	127	128	129	130	131	132	
Plot size (m^2)	100	100	100	100		100	100	100	50	50	50	50	
Total cover (%)	97	95	100	90		90	90	80	80	95	70	90	
Exposure	0	0	S	E		0	0	0	ESE	E	ESE	ENE	
Slope (º)	0	2	1	2		0	0	4	0	5	4	4	
Species N.	13	12	10	12		36	60	27	36	41	59	40	
Character species of the associations													
Pistacia lentiscus	2a	2a		+	V	.	.	.	.	.	.	.	.
Juniperus macrocarpa	4	4	5	5	V	.	.	.	.	.	.	.	.
Quercus coccifera	.	.	.	.	.	5	5	4	4	4	4	4	V
Character species of *Pistacio lentisci-Rhamnetalia alaterni*													
Prasium majus	2b	2b	2b	.	IV	2b	2m	2m	2b	.	2a	2m	V
Arisarum vulgare	.	.	.	.	.	1	1	2m	.	.	.	.	III
Rubia tenuifolia	.	.	.	.	.	.	+	.	.	.	.	.	I
Rhamnus lycioides subsp. oleoides	2m	.	.	.	II	.	.	.	r	.	1	.	II
Calicotome villosa	.	.	.	.	.	.	.	.	2a	.	2a	1	III
Asparagus acutifolius	.	.	.	.	.	1	.	.	.	.	.	.	I
Character species of *Cisto-Micromerietea julianae*													
Drimia numidica	.	.	.	.	.	+	1	.	+	r	+	+	V
Centaurea raphanina	.	.	.	.	.	.	1		+	2b	r	1	IV
Genista acanthoclada	.	.	.	.	.	.	.	.	2a	3	.	3	III
Sarcopoterium spinosum	.	.	.	.	.	.	.	.	+	2b	2a	1	III
Thymbra capitata	.	.	.	.	.	.	.	.	.	2a	2m	2a	III
Helichrysum stoechas subsp. barrelieri	.	.	.	.	.	.	.	.	.	1	1	2m	III
Cistus creticus	.	.	.	.	.	.	.	.	.	2m	.	1	II
Teucrium divaricatum	.	.	.	.	.	.	.	.	.	.	2b	2m	II
Fumana arabica	.	.	.	.	.	.	.	.	.	.	2m	2b	II

Fumana thymifolia	.	.	.	.	.	.	.	.	.	.	+	1	II
Micromeria nervosa	.	.	.	.	.	.	+	.	.	.	1	+	III
Ballota acetabulosa	.	.	.	.	.	1	.	+	.	.	.	.	II
Asparagus aphyllus	.	.	.	.	.	.	+	+	.	.	.	.	II
Teucrium capitatum	.	.	.	.	.	.	.	.	.	1	1	.	II
Anthyllis hermaniae	.	+	.	.	II	.	.	.	.	.	.	.	.
Phlomis fruticosa	.	.	.	.	.	1	.	.	.	.	.	.	I
Carlina corymbosa	.	.	.	.	.	.	.	.	.	r	.	.	I
Erica manipuliflora	.	.	.	.	.	.	.	.	.	.	.	2m	I
Character species of *Thero-Brachypodietea*													
Valantia hispida	.	r	.	.	II	.	1	.	2m	1	+	+	IV
Lagurus ovatus	1			1	III	+	.	.	.	.	.	.	I
Crucianella latifolia	.	.	.	.	.	1	2m	+	+	.	+	.	IV
Pseudorlaya pumila	1	.	+	.	III	.	.	.	.	.	.	.	.
Rumex bucephalophorus	+	.	+	.	III	.	.	.	.	.	.	.	.
Silene colorata	.	.	1	2m	III	.	.	.	.	.	.	.	.
Urospermum picroides	.	.	.	.	.	r	1	.	1	.	+	.	III
Briza maxima	.	.	.	.	.	+	.	+	+	+	+	.	IV
Trifolium scabrum	.	.	.	.	.	.	1	.	+	.	+	1	III
Trifolium campestre	.	.	.	.	.	.	1	.	1	2m	1	1	IV
Catapodium rigidum	.	.	.	.	.	.	2m	.	1	.	r	1	III
Hypochaeris achyrophorus	.	.	.	.	.	.	+	.	1	.	r	.	III
Trifolium stellatum	.	.	.	.	.	.	1	.	.	.	+	.	II
Medicago coronata	.	.	.	.	.	.	+	.	.	.	+	.	II
Biscutella didyma	.	.	r	.	.	.	.	.	+	r	+	+	III
Tordylium apulum	.	.	.	.	.	.	.	.	2m	+	+	.	III
Asterolinon linum-stellatum	.	.	.	.	.	.	.	.	+	r	1	.	III
Linum strictum	.	.	.	.	.	.	.	.		r	1	1	III
Brachypodium distachyon	.	.	.	.	.	.	.	.	+	.	.	1	II
Aira elegantissima	.	.	.	.	.	.	.	.	+	.	+	.	II
Hippocrepis ciliata	.	.	.	.	.	.	.	.		r	1	.	II
Euphorbia exigua	.	.	.	.	.	.	.	.		r	+	.	II
Cynosurus echinatus	.	.	.	.	.	.	.	1	.	.	.	.	I
Hedypnois rhagadioloides	.	.	.	.	.	.	.	.	1	.	.	.	I
Ononis reclinata	.	.	.	.	.	.	.	.	.	r		.	I
Tuberaria guttata	.	.	.	.	.	.	.	.	.	r	.	.	I
Campanula erinus	.	.	.	.	.	.	.	.	.	.	r	.	I
Clypeola jonthlaspi	.	.	.	.	.	.	.	.	.	.	.	+	I
Malcolmia chia						.	+	.	.	.	.	.	I
Crupina crupinastrum	.	.	.	.	.	.	.	.	.	+	.	.	I
Other species													
Phagnalon rupestre subsp. graecum	1	+	2a	.	IV	.	+	.	.	+	.	.	II
Asphodelus ramosus	1	.	.	.	II	1	.	1	.	+	+	.	III
Helichrysum italicum	2m	2b	+	2a	V	.	.	.	.	.	.	.	.
Senecio vernalis		+	1	2m	IV	.	.	.	.	.	.	.	.
Dactylis glomerata	.	.	.	.	.	2b	2m	2b	1	2m	.	2m	V
Melica minuta	.	.	.	.	.	2m	2m	.	1	1	2m	1	V
Geranium purpureum	.	.	.	.	.	1	2m	+	.	.	r	.	III
Torilis leptophylla	.	.	.	.	.	1	+	r	.	.	.	.	III
Crepis multiflora	.	.	.	.	.	+	1	1	.	.	.	.	III
Trifolium physodes	.	.	.	.	.	2m	+	+	.	.	.	.	III
Lagoecia cuminoides	.	.	.	.	.	.	1	.	2m		1	.	III
Sherardia arvensis	.	.	.	.	.	.	1	.	.	+	+	.	III
Scaligeria napiformis	.	.	.	.	.	.	2b	.	.	.	1	1	III
N. of accidental species	2	3	1	6		18	32	13	12	14	21	14	

& Mavrommatis (1971) mentioned that the *Q. ilex* formations as well as those of the deciduous *Q. frainetto* and *Q. pubescens* in Greece have been in many cases replaced by *Q. coccifera* shrublands.

The Greek *Q. coccifera* formations occupy an area of more than 1.5 million hectares (Platis & Papanastasis, 2003). Their altitudinal distribution in Southern and Western Greece reaches 1,200 m, in Central Greece 1,000 m, and in Northern Greece 700 m (Mavrommatis, 1980), while in some areas, such as in Kriti, they can be found even higher (Tsiourlis *et al*., 2001).

Sarcopoterium spinosum *phryganas (habitat code: 5420)*

Thymbra capitata, *Genista acanthoclada*, *Helichrysum stoechas* subsp. *barrelieri* and *Sarcopoterium spinosum*, all typical and diagnostic species of the class *Cisto-Micromerietea julianae*, are the most frequent and constant elements of dwarf shrub formations investigated in Naxos and in the adjacent Mikres Kiklades. *Thymbra capitata* is recorded in twenty-five out of thirty three relevés corresponding to the habitat type of phrygana and it is the dominant species of a discernible group of 12 relevés (Tab. 5). It is also constantly associated with a different group of (5) relevés dominated by *Erica manipuliflora* (Tab. 5). Moreover *Genista acanthoclada* and *Sarcopoterium spinosum*, both amongst the significant elements of *Cisto-Micromerietea julianae*, are frequently mixed in a fairly different formation, while five almost always monospecific stands of *Sarcopoterium spinosum* constitute a separate community (Tab. 6). Finally a community dominated by *Cistus salviifolius* and *Cistus parviflorus* is recorded in Schinousa, Iraklia and Ano Koufonisi (Tab.6).

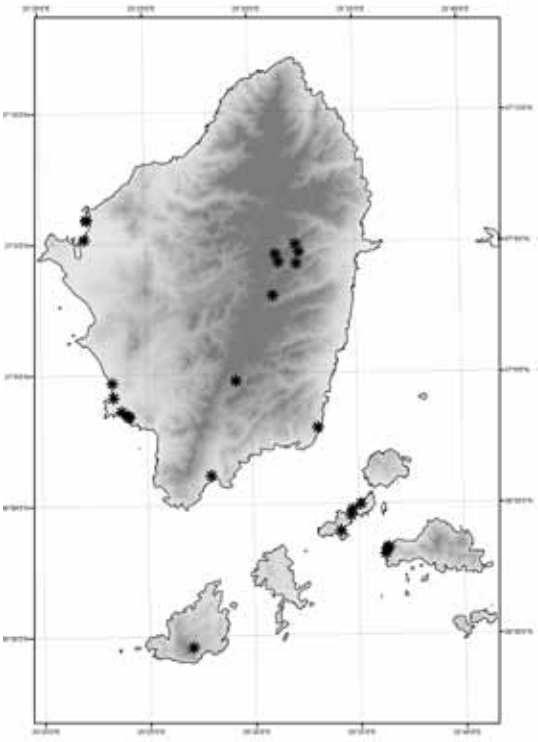

Fig. 6 - Sites of the relevés of the habitat types Mediterranean sclerophyllous shrublands (maquis) (2250, 5210 and the Greek habitat type 934A).

Bergmeir *et al*. (2011) notified that phryganic formations of Gavdopoula island are commonly dominated by *Thymbra capitata* while Panitsa & Tzanoudakis (1998) recorded three different phryganic vegetation types from the East Aegean islands Agathonisi and Pharmakonisi. These are very similar to the above mentioned communities. Tzanoudakis *et al*. (2006) also reported the dominance of xerophilous dwarf shrubs such as *Sarcopoterium spinosum*, *Thymbra capitata* and *Erica manipuliflora* in Antikithira island, where phrygana formations of the class and order *Cisto-Micromerietea* (*-etalia*) were well developed, underlining that intense grazing and fires or land-clearance lead to the dominance of spiny shrubs, mostly *Genista acanthoclada*. Likewise a *Genista acanthoclada - Sarcopoterium spinosum* vegetation type (Economidou, 1976) and a phase of *Thymbra capitata - Sarcopoterium spinosum* community with *Genista acanthoclada* (Lavrentiades, 1976) are sufficiently similar. Vallianatou (2005) demonstrated a resembling formation from the islands Aigina, Salamina and Moni as *Sarcopoterio spinosi-Coridothymetum capitati*, which however was characterized by minimal presence of *Genista acanthoclada*. Kazanis & Arianoutsou (2006) quoted that in all investigated sites of lower altitude in Western Kriti, seasonal dimorphic shrubs, such as *Sarcopoterium spinosum*, *Genista acanthoclada* and *Thymbra capitata* were the dominant plant species. They also mention a *Pinus halepensis* forest type in Central Greece, with sparse, open, woody understorey, dominated by dwarf shrubs, such as *Thymbra capitata*, *Phagnalon graecum* and *Helichrysum stoechas*, distributed on slopes or plains of low altitude, usually not far away from the seashore (Kazanis & Arianoutsou, 2004). *Thymbra capitata* and *Sarcopoterium spinosum* co-dominance in plant communities has frequently been recorded from several Greek localities (Knapp, 1965; Lavrentiades, 1969; Aplada, 2003).

Economidou (1976) cited the phytocoena of *Thymbra capitata* and/or *Sarcopoterium spinosum* among the most essential dwarf shrub communities of Greece, considering them as a vegetation type commonly encountered in abandoned fields. Lavrentiades (1975) pointed out that *Thymbra capitata* and/or *Sarcopoterium spinosum* communities can be developed in various substrates due to the ability of their roots to penetrate deep into the soil up to the underground water. In Aegean islands, phryganic communities with *Sarco-*

poterium spinosum occur in many soils and throughout a wide climatic range (Delipetrou *et al*., 1996; Arianoutsou *et al*., 1997). The species is thought to have originated in the semiarid transition zone between the Mediterranean and Irano-Turanian steppe vegetation zones (Litav & Orshan, 1971; Zohary, 1973). From there, it invaded abandoned agricultural land in the more humid Mediterranean zone, especially in hilly, rocky regions (Litav & Orshan, 1971; Baruch, 1986, 1990).

Most of the above mentioned researchers assign the communities with *Thymbra capitata* and/or *Sarcopoterium spinosum* within the *Coridothymion capitati* alliance. This syntaxon was renamed as *Dorycnio-Coridothymion capitati* (Brullo *et al*., 1997) and classified (incorporated) within the *Micromerion julianae* alliance. According to Mucina *et al*. (2009) this alliance is usually related with calcareous substrates of northern and central Greece in contradistinction to the alliance *Helichryso barrelieri-Phagnalion graeci* that is exclusively recorded from non calcareous habitats of southern Greece. The *Helichryso barrelieri-Phagnalion graeci* occurs in the south regions of mainland and insular Greece and in the west and southwest coasts of Turkey. It is characterized by the absence of subnitrophilous species such as *Euphorbia acanthothamnos* and *Ballota acetabulosa*, as well as by the presence of taxa with low nitrogen indicator values such as *Cistus creticus*, *C. salviifolius*, *Genista acanthoclada*, *Erica manipuliflora*, *Satureja thymbra*, *Hypericum empetrifolium* and *Helichrysum stoechas* subsp. *barrelieri* (Böhling *et al*., 2002).

The floristic composition of the relevés corresponding to the dwarf shrub communities, designates their affinity to the *Helichryso barrelieri-Phagnalion graeci* alliance and allows their classification within this vegetation type (Tab. 5 & 6). Brullo *et al*. (1997) accepted two orders within the class *Cisto-Micromerietea*, the *Sarcopoterietalia spinosi* (synonym of *Cisto-Micromerietalia*) and the *Cisto-Ericetalia* which are distributed in the eastern and central Mediterranean region respectively. Mucina *et al*. (2009) reported the order *Sarcopoterietalia spinosi* as *Poterietalia spinosi* validating the name according to the International Code of Phytosociological Nomenclature (Weber *et al*. 2000). The *Helichryso barrelieri-Phagnalion graeci* is confined to the order *Poterietalia spinosi*.

Southern riparian galleries and thickets (*Nerio-Tamaricetea *and* Securinegion tinctoriae*) (habitat code: 92D0)

Four stands with *Nerium oleander* and one with *Vitex agnus-castus* were found in the investigated area (Tab. 7). This vegetation type was only observed in Naxos, along streams without permanent flow. It belongs to the *Nerio-Tamaricetea* class, which includes dwarf

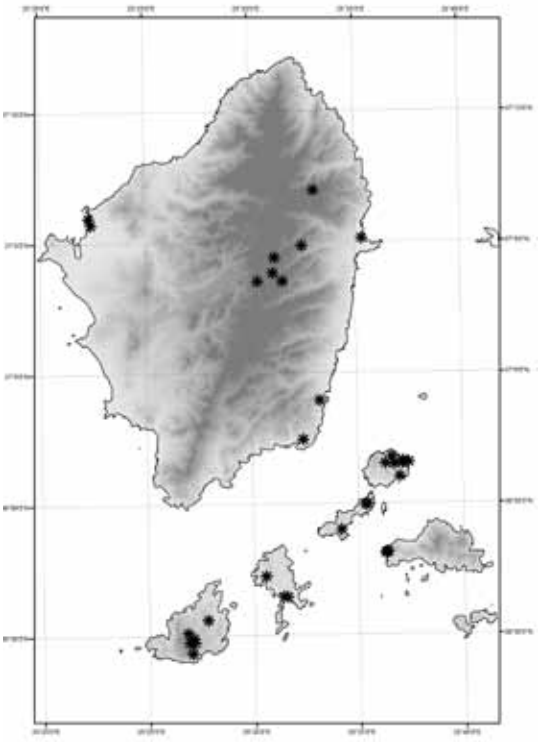

Fig. 7 - Sites of the relevés of the habitat type *Sarcopoterium spinosum* phryganas (5420).

woodlands and scrubs developing in fresh, brackish or saline habitats without water (running or standing) during long periods of the year (Asensi & Díez-Garretas, 2011). One order, *Tamaricetalia africanae* and three alliances have been mainly distinguished within this class in the Mediterranean region: *Tamaricion africanae*, *Rubo ulmifolii-Nerion oleandri* (fresh water) and, *Tamaricion boveano-canariensis* (brackish water). These alliances group all the thermophilous communities of *Nerium oleander* or *Vitex agnus-castus* growing in rivulets and dry ravines with discontinuously flowing water (Bolòs, 1985; Jasprica *et al*., 2007). Another three syntaxa, that are rather regionally restricted, have been lately ascribed to the Mediterranean region (Brullo *et al*., 2004; Jasprica *et al*., 2008; Quézel & Médail, 2003; Rivas-Martínez, 2011).

In our opinion, the floristic composition of our *Tamaricetalia africanae* relevés, being dominated by *Nerium oleander* or *Vitex agnus-castus* allows their classification within the alliance *Rubo ulmifolii-Nerion oleandri*. According to Asensi & Díez-Garretas (2011) the taxa that show the greater biomass in the communities of this alliance, which is the most diversified in the Western Mediterranean region, spreading from the Iberian Peninsula and northern Africa to the Adriatic coasts, are *Nerium oleander* and/or *Vitex agnus-castus* along with *Rubus ulmifolius* and several *Quercetea ilicis* elements. However the phytocoena encountered in

Tab. 5 - *Erica manipuliflora-Thymbra capitata* comm. (rels. 1-5), *Thymbra capitata* comm. (rels. 6-17).

Relevé N.	1	2	3	4	5		6	7	8	9	10	11	12	13	14	15	16	17	
Relevé N. (dendrogram of Fig. 4)	88	89	90	91	92		75	76	77	79	78	84	80	96	86	81	82	83	
Plot size (m^2)	50	50	50	100	50		50	50	50	50	50	50	50	50	50	50	50	50	
Total cover (%)	80	80	75	85	85		75	90	90	80	75	90	90	70	80	85	70	75	
Exposure	0	E	SW	NNW	ENE		SSW	NNW	E	SE	WNW	SW	ENE	S	SW	WSW	0	SW	
Slope (°)	0	1	1	2	2		2	1	2	1	1	1	1	1	1	2	0	1	
Species N.	8	15	17	9	13		9	20	59	16	20	13	16	23	16	29	9	17	
Character species of the associations																			
Erica manipuliflora	5	4	2a	4	4	V	r	.	.	.	.	1	+	.	.	.	.	2m	II
Thymbra capitata	2b	3	2b	3	2b	V	4	5	5	4	2b	4	5	4	5	3	1	2m	V
Character species of *Helichryso barrelieri-Phagnalion graeci*																			
Genista acanthoclada	2a	2b	3	.	.	III	.	+	.	2a	.	.	1	.	.	.	.	.	II
Cistus creticus	2m	.	.	.	2a	II	.	.	2a	.	.	.	.	.	.	2b	.	.	I
Helichrysum stoechas subsp. barrelieri	1	+	+	.	.	III	.	.	.	.	4	2b	1	1	1	1	4	+	III
Cistus parviflorus	.	4	4	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Cistus salvifolius	.	.	.	2a	3	II	.	.	.	.	.	.	.	.	.	r	.	.	I
Character species of *Poterietalia spinosi*																			
Teucrium brevifolium	.	2b	3	r	.	III	.	.	.	.	.	.	.	.	.	2a	.	.	I
Teucrium capitatum	.	.	.	.	.		.	1	.	.	.	.	2b	.	2m	2a	.	+	II
Teucrium divaricatum	.	1	1	.	1	III	.	2m	.	.	.	.	.	.	.	.	.	.	I
Drimia numidica	.	r	.	.	.	I	+	.	.	+	.	.	.	1	+	+	.	.	III
Fumana thymifolia	1	2m	1	+		III	.	.	.	.	.	.	.	.	.	+	.	.	I
Atractyllis cancellata	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	+	.	.	I
Character species of *Cisto-Micromerietea julianae*																			
Centaurea raphanina	.	2m	+	.	+	III	.	2m	.	.	.	+	.	.	+	1	.	2b	III
Astragallus spruneri	1	.	.	.	.	I	.	1	.	+	.	.	.	r	1	.	.	.	II
Anthyllis hermaniae	.	.	2a	.	.	I	.	.	.	.	.	3	.	.	.	3	.	3	II
Thymelea tartonraira	.	.	.	.	.		.	.	.	.	.	2a	.	.	.	.	2b	4	II
Hypericum empetrifolium	.	.	.	.	2a	I	.	.	.	.	.	.	.	.	.	.	.	.	.
Carlina corymbosa	.	.	.	.	.	.	.	r	.	.	.	.	r	.	.	.	.	.	I
Ballota acetabulosa	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	I
Crupina crupinastrum	.	.	.	+		I	.	.	.	+	.	.	.	.	.	+	.	.	I
Ophrys lutea	.	.	.	.	.	.	.	.	.	.	.	.	2m	.	.	.	.	.	I
Sarcopoterium spinosum	.	.	.	.	.	.	.	.	.	2b	.	.	.	.	.	.	.	.	I
Character species of *Quercetea ilicis*																			.
Juniperus phoenicea	.	+	2a	2b	r	IV	+	.	.	.	+	.	.	+	.	.	.	.	II
Pistacia lentiscus	.	.	2m	2m	+	III	.	.	.	.	.	.	.	.	.	.	.	.	.
Rhamnus lycioides subsp. oleoides	.	.	.	.	.		.	.	.	.	.	.	.	.	.	.	.	.	.
Prasium majus	.	.	1	.	.	I	.	.	.	.	+	2m	.	.	.	.	.	.	I
Calicotome villosa	.	.	1	.	.	I	.	.	.	.	.	.	.	.	.	.	.	.	.
Arisarum vulgare	.	.	.	.	.		+	.	.	.	1	.	.	.	.	.	.	.	I
Rubia tenuifolia	.	.	.	.	1	I	.	.	.	.	.	.	.	.	.	.	.	.	.
Character species of *Thero-Brachypodietea*																			
Linum strictum	.	.	.	.	.	.	.	r	.	2m	+	.	1	+	1	1	.	.	III
Valantia hispida	.	.	.	.	.	.	.	1	.	.	2m	.	.	1	.	.	.	1	II
Euphorbia exigua	.	.	.	.	.	.	.	2a	.	.	.	.	.	.	.	.	.	.	I
Trifolium stellatum	.	.	.	.	.	.	.	.	1	r	.	.	.	+	.	.	.	.	II
Onobrychis caput-galli	+	.	.	.	.	I	.	.	+	+	.	.	.	.	.	+	.	.	II
Catapodium rigidum	.	.	.	.	.	.	.		1	.	.	.	.	.	.	2m	.	.	I
Trifolium campestre	.	.	.	.	.	.	.	+	1	1	.	.	.	+	.	+	.	.	III

Trifolium scabrum	.	.	.	.	.	.	.	.	+	1	.	.	.	r	.	1	.	.	II
Briza maxima	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	I
Tordylium apulum	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	I
Aira elegantissima	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	I
Galium murale	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	I
Medicago disciformis	.	.	.	.	.	.	.	.	1	.	.	.		.	.	.	.	.	I
Hedypnois rhagadioloides	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	I
Petrorhagia dubia	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	I
Tuberaria guttata	.	.	.	.	.	.	.	.	2m	.	.	.	.	.	.	.	.	.	I
Vulpia ciliata	.	.	.	.	.	.	.	.	2m	.	.	.	.	.	.	.	.	.	I
Cynosurus echinatus	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	I
Lagurus ovatus	.	.	.	.	.	.	.	.	2m	.	.	.	.	.	.	.	.	.	I
Plantago bellardii	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	+	.	.	I
Silene colorata	.	.	.	.	.	.	.	.	2m	.	.	.	.	.	.	.	.	.	I
Urospermum picroides	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	I
Silene nocturna	.	.	.	.	.	.	.	.	r	.	.	.		.	.	.	.	.	I
Rumex bucephalophorus	.	.	.	.	.	.	.	.	r	.	.	.	.	.	.	.	.	.	I
Medicago truncatula	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	I
Medicago rigidula	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	.	I
Hypochaeris glabra	.	.	.	.	.	.	.	.	r	.	.	.	.	.	.	.	.	.	I
Plantago afra	.	.	.	.	.	.	.	.	.	+	.	.	.	.	.	.	.	.	I
Brachypodium distachyon	.	.	.	.	.	.	.	.	.	2m	.	.	.	+	.	.	.	.	I
Pseudorlaya pumila	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	I
Medicago littoralis	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Echium arenarium	.	.	.	.	.	.	.	.	.	.	.	.	2m	.	.	.	.	.	I
Hypochaeris achyrophorus	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	I
Lotus edulis	.	.	.	.	.	.	.	.	.	.	r	.	.	.	.	.	.	+	I
Medicago coronata	.	.	.	.	.	.	.	.	.	+	.	.	.	r	.	.	.	.	I
Hippocrepis ciliata	.	.	.	.	.	.	.	.	.	+	.	.	.	+	.	.	.	.	I
Sulla spinosissima	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	.	.	I
Scorpiurus muricatus	.	.	.	.	.	.	.	.	.	.	.	.	.		+	+	.	.	I
Plantago lagopus	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	I
Asterolinon linum-stellatum	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	+	.	.	I
Hyoseris scabra	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Hippocrepis biflora	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Other species						.				.									
Dactylis glomerata	.	.	.	.	.	.	.	1	2m	.	2a	1	2b	.	2b	2m	.	2b	IV
Aetheorhiza bulbosa	.	.	.	.	.	.	1	.	.	.	1	.	1	.	2m	2m	.	.	III
Trifolium uniflorum	.	.	.	.	.	.	2b	+	1	.	2m	.	.	.	.	.	.	r	II
Phagnalon rupestre subsp. graecum	.	.	.	.	+	I	.	.	.	+	.	+	2b	.	1	+		+	III
Leontodon tuberosus	.	.	.	+	2m	II	.	+	2b	.	.	.		.	+	1	.	.	II
Lotus cytisoides	.	.	.	.	.	.	.	.	.	.	r	1	+		1		1	+	III
Limonium graecum	.	.	.	.	.	.	.	.	.	.	+	+					1	r	II
N. of accidental species	0	4	3	0	1		2	6	29	6	6	2	3	8	3	4	3	3	

Tab. 6 - *Genista acanthoclada-Sarcopoterium spinosum* comm. (rels. 1-8), *Sarcopoterium spinosum* comm. (rels. 9-13), *Cistus salvifolius-Cistus parviflorus* comm.

Relevé N.	1	2	3	4	5	6	7	8		9	10	11	12	13		14	15	16	
Relevé N. (dendrogram of Fig. 4)	93	95	97	98	100	107	85	87		94	99	101	102	103		104	105	106	
Plot size (m^2)	50	50	50	50	50	50	50	50		50	50	50	50	50		50	50	60	
Total cover (%)	80	70	65	90	95	90	80	90		90	100	80	80	90		100	40	100	
Exposure	NNE	WSW	NNE	SE	N	NNW	ESE	NE		0	NNE	N	NNW	SW		NW	NE	SE	
Slope (º)	1	1	1	2	3	3	3	2		0	3	2	4	3		2	3	2	
Species N.	30	30	30	28	49	21	18	52		33	32	36	25	50		14	36	14	
Character species of the associations																			
Genista acanthoclada	3	4	+	5	5	3	3	4	V	r	2a	.	.	.	II	.	.	.	
Sarcopoterium spinosum	+	2a	2a	2b	2a	.	+	.	IV	5	5	4	4	5	V	.	.	.	
Cistus salvifolius	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	4	4	4	V
Cistus parviflorus	.	.	.	.	.	2b	.	.	I	.	.	.	.	.	.	3	2a	3	V
Character species of *Helichryso barrelieri-Phagnalion graeci*																			
Cistus creticus	r	.	+	.	2m	2b	2a	.	IV	.	.	.	.	.	.	.	1	.	II
Satureja thymbra	2a	.	.	.	r	.	.	.	II	.	.	.	.	.	.	.	.	.	
Erica manipuliflora		.	.	.	.	.	2a	3	II	.	.	.	.	.	.	.	.	.	
Helichrysum stoechas subsp. barrelieri	+	.	.	.	.	+	+	+	III	.	.	.	.	.	.	+	.	.	II
Character species of *Poterietalia spinosi*																			
Thymbra capitata	2a	2a	2a	.	.	.	3	2b	IV	2a	.	+	.	.	II	.	1	.	II
Drimia numidica	.	+	.	.	.	+	.	1	II	+	.	1	+	r	IV	.	1	+	IV
Teucrium brevifolium	.	2a	.	.	.	2a	.	2m	II	.	.	.	.	.		2a	+	.	IV
Teucrium capitatum	+	.	+	.	.	.	.	.	II	.	.	.	.	.			.		
Teucrium divaricatum	1	2a	.	.	.	.	2m	.	II			+			I	2b	+	.	IV
Fumana thymifolia	+	+	.	.	.	.	.	.	II	.	.	.	.	.	.	.	.	.	
Atractyllis cancellata	.	.	+	.	.	.	.	+	II	.	.	.	.	.	.	.	.	.	
Character species of *Cisto-Micromerietea julianae*																			
Centaurea raphanina	1	+	r	1	.	.	+	2m	IV	.	+	1	+	+	IV	.	+	+	IV
Crupina crupinastrum	.	.	+	+	+	.	.	.	II	1	.	.	.	.	I	.	.	.	
Carlina corymbosa	.	+		+	+	.	.	.	II		+	.	.	+	II	.	.	.	
Cistus monspeliensis	3		4	.	.	.	.	.	II	.	.	.	.	.	.	.	.	.	
Ballota acetabulosa	.	.	.	.	2m	.	.	.	I	.	.	.	.	2m	I	.	.	.	
Micromeria nervosa	.	.	.	.	.	.	.	.		.	.	+	2m		II	.	.	.	
Anthyllis hermaniae	r	.	.	.	.	.	+	.	II	.	.	.	.	.	.	.	.	.	
Convolvulus oleifolius	r	.	.	.	.	.	.	.	I	.	.	.	.	.	.	.	.	.	
Astragallus spruneri	.	.	.	.		.	.	.		.	.	.	.	.	.	.	.	.	
Asparagus aphyllus	.	.	.	.	+	.	.	.	I	.	.	.	.	.	.	.	.	.	
Hypericum empetrifolium	.	.	.	.	.	+	+	.	II	.	.		1		I	.	.	.	
Fumana arabica	.	.	.	.	.		+	2m	II	.	.	.	.	.	.	1	.	.	II
Thymelea tartonraira	.	.	.	.	.		2a	.	I	.	.	.	.	.	.	.	.	.	
Character species of *Quercetea ilicis*																			
Quercus coccifera	+	.	.	.	2a	.	.	.	II		2a	.	.	.	I	.	.	.	
Prasium majus	.	2b	.	.	.	.	.	1	II	.	.	.	.	+	I	2m	1	2m	V
Arisarum vulgare	.	+	.	.	.	.	.	.	I	.	.	1	.	.	I	.	+	.	II
Rhamnus lycioides subsp. oleoides	.	.	.	.	.	.	.	+	I	.	.		.	2a	I	.	2a	2a	IV
Juniperus phoenicea	.	.	.	.	.	.	r	+	II	.	.	.	.	.	.	2a	2a	1	V
Pistacia lentiscus	.	.	.	.	.	.	+	.	I	.	.	.	.	.	.	2b	2a	2b	V
Rubia tenuifolia	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	II
Ephedra foeminea	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	r	II
Character species of *Crithmo-Limonietea*																			
Anthemis rigida	.	.	.	2b	+	.	.	.	II	2m	2m	.	.	2m	III	.	.	.	
Character species of *Thero-Brachypodietea*																			
Linum strictum	2m	1	.	.	.	+	.	2b	III	1		1	+	.	III	.	.	.	
Aira elegantissima	r	.	r	+	.	.	.	.	II	1	+	.	.	.	II	.	+	.	II
Tuberaria guttata	1	.	.	.	+	.	.	.	II	+	.	.	.	.	I	.	+	.	II
Onobrychis caput-galli	r	.	r	.	.	.	.	.	II	.	.	.	.	.	.	.	.	.	
Catapodium rigidum	1	1	.	.	.	.	.	+	II			1	.	1	II	.	.	.	

Trifolium campestre	.	.	.	+	1	.	.	.	II	1	+	.	.	.	II	.	.	.	
Briza maxima	.	.	.	+	+	.	.	.	II	r	+		+	1	IV	.	.	.	
Tordylium apulum	.	.	.	.	.	.	.	.	.	1	+	+	+	+	V	.	.	.	
Asterolinon linum-stellatum	.	2m	.	1	.	2m	.	.	II	+	.	2m	.	.	II	.	1	.	II
Galium murale	.	.	.	.	+	.	.	.	I	1	.	+	.	+	III	.	+	.	II
Medicago disciformis	.	.	.	.	.	.	.	1	I	r	.	+	+		III	.	.	.	
Valantia hispida	.	.	.	.	.	.	.	2m	I	1	.	2m	2m	1	III	.	.	.	
Vulpia ciliata	.	.	.	1	.	.	.	.	I	+	1	.	.	.	II	.	.	.	
Hypochaeris achyrophorus	.	+	.	2m	+	.	.	.	II	.	+	.	+	r	III	+	+	.	II
Trifolium stellatum	.	.	+	1	1	.	.	.	II	.	1	+	.	1	III	.	.	.	
Trifolium scabrum	.	.	r	.	+	.	.	r	II	.	.	1	.		I	.	.	.	
Plantago lagopus	.	.	1	.	.	.	.	1	II	.	.	1	+		II	.	.	.	
Brachypodium distachyon		.	1	.	.	.	.	.	I	.	.	.	.		.	.	.	.	
Plantago afra		.	+	.	.	.	.	.	I	.	.	.	.		.	.	.	.	
Medicago coronata	.	.	.	.	.	.	.	.	.	.	.	.	.	+	I	.	.	.	
Hippocrepis ciliata	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
Hedypnois rhagadioloides	.	.	+	.	.	.	.	.	I	.	.	.	.	.	.	.	.	.	
Plantago bellardii	.	.	1	.	.	.	.	.	I	.	.	.	.	.	.	.	.	.	
Ononis reclinata	.	.	r	.	.	.	.	.	I	.	.	.	.	.	.	.	.	.	
Petrorhagia dubia	.	.	.	1	1	.	.	.	II	.	2m	.	.	r	II	.	.	.	
Cynosurus echinatus	.	.	.	1	2m	.	.	.	II	.	1	.	.	.	I	.	.	.	
Lotus edulis	.	.	.	.		.	.	.		.	.	.	.	.	.	.	.	.	
Lagurus ovatus	.	.	.	.	1	.	.	+	II	.	.	.	.	.	.	.	.	.	
Anthemis chia	.	.	.	.	1	.	.	.	I	.	.	.	.	+	I	.	.	.	
Hyoseris scabra	.	.	.	.	.	.	.	+	I	.	.	+	+	.	II	.	.	.	
Moraea sisyrinchium	.	.	.	.	.	.	.	.	I	.	.	+	.	.	I	.	.	.	
Silene colorata	.	.	.	.	.	.	.	.	I	.	.	.	.	r	I	.	.	.	
Urospermum picroides	.	.	.	.	.	.	.	+	I	.	.	.	.	1	I	.	.	.	
Rumex bucephalophorus	.	.	.	.	.	.	.	.	.	.	.	.	.	r	I	.	.	.	
Malcolmia chia	.	.	.	.	.	.	.	.	.	.	.	.	.	r	I	.	.	.	
Clypeola jonthlaspi	.	.	.	.	.	.	.	.	.	.	.	.	.	r	I	.	.	.	
Campanula erinus	.	.	.	.	.	.	.	.	.	.	.	.	.	r	I	.	.	.	
Medicago littoralis	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.		.	
Euphorbia exigua	.	.	.	.	.	.	.	+	I	.	.	.	.	.	.	.	1	.	II
Silene nocturna	.	.	.	.	.	.	.	+	I	.	.	.	.	.	.	.	.	.	
Hippocrepis biflora	.	.	.	.	.	.	.	2b	I	.	.	.	.	.	.	.	.	.	
Other species																			
Dactylis glomerata	1	.	1	2m	2b	2m	1	2m	V	1	2m	1	.	.	III	2m	2m	.	IV
Aetheorhiza bulbosa	.	.	.	.	.	2m	2m	+	II	.	.	2m	2m	.	II	.	2m	.	II
Phagnalon rupestre subsp. graecum	+	2m	.	.	.	2a	1	+	IV	.	.		1	.	I	+	.	+	IV
Leontodon tuberosus	.	.	.	.	1	1	+	r	III	.	.	2m	1	.	II	.	1	.	II
Trifolium uniflorum	.	.	.	+	.	.	.	.	I	1	1	.	.	+	III	.	.	.	.
Euphorbia peplis	.	1	.	.	+	1	.	+	III	.	+	2m	2m	+	III	.	2m	.	II
Sherardia arvensis	r	1	.	+		1	.	+	IV	+	.	2m	1	r	IV	.	.	.	.
Lagoecia cuminoides	.	.	.	+	+	.	.	.	II	2m	.	.	.	+	II	.	.	.	.
Convolvulus althaeoides	r	.	r	+	+	.	.	.	IV	.	r	.	.	.	I	.	.	.	.
Asphodelus ramosus	.	1	.	.	.	1	.	.	II	.	r	+	.	+	III	1	+	.	IV
Anagallis arvensis	.	1	.	.	.	.	.	+	II	+	.	+	.	.	II	.	.	.	.
Biscutella didyma	.	+	.	+	r	+	.	1	IV	.	.	+	.	r	II	.	+	.	II
Vicia cretica	.	.	.		2m	1	.	.	II	1	1	1	+	1	V	.	1	.	II
Rostraria cristata	.	.	r	+	.	.	.	.	II	+	.	.	.	1	II	.	.	.	.
Avena barbata		1	.	.	.	.	.	.	I	.	+	.	.	1	II	.	.	.	.
Sellaginella denticulata	.	.	.	.	.	1	.	.	I	.	.	2a	2a	1	III	.	2b	.	II
Bupleurum gracile	2m	.	1	.	.	.	.	.	II	1	.	.	.	.	I	.	.	.	.
Daucus guttatus	1	.	1	.	.	.	.	.	II	.	.	.	.	.		.	.	.	.
Allium subhirsutum	.	.	.	.	.	1	.	.	I	.	.	2m	.	.	I	.	2m	1	IV
Medicago orbicularis	.	.	.	.	+	.	.	+	II	.	r	.	+	.	II	.	.	.	.
Rumex tuberosus	.	.	.	2m	1	.	.	.	II	.	1	.	.	.	I	.	.	.	.
N. of accidental species	4	7	6	4	19	1	0	25		8	8	6	4	16		1	8	2	

Naxos differ rather sufficiently from the communities of *Rubo ulmifolii-Nerion oleandri* described from the west-Mediterranean territories, as *Rubus ulmifolius* (differential of the alliance) and species of the *Quercetea ilicis* class were thoroughly absent from their structure. Instead, species of *Asplenietea trichomanis* and *Thero-Brachypodietea* were frequent or constantly present. *Arum italicum* appeared also as a constant companion species (Tab. 7). Jasprica *et al*. (2007) mentioned that herbaceous plants of the Thero-Brachypodietea are diverse in the *Rubo ulmifolii-Nerion oleandri* associations, especially in Croatia, Montenegro and Sicily. It must also be noted that the *Nerium oleander* and *Vitex agnus-castus* stands found in the investigated central Aegean area are significantly different from the hygrophilic oleander associations described up till now in the Mediterranean (cf. Izco *et al*., 1984; Biondi *et al*., 1994; Dimopoulos *et al*., 2005), which are usually attached to the *Populetalia albae* both in Greece (Krause *et al*., 1963; Bolòs *et al*., 1996) and in Bosnia and Herzegovina (Periploco-Viticetum agni-casti) (Jasprica & Carić, 2002) or *Salicetea purpureae* in southern Italy (Biondi *et al*., 1994). Finally, the association *Vitici-Tamaricetum* is widespread in brackish habitats of Dalmatia (Horvatić, 1963) and Albania (Fanelli *et al*., 2015).

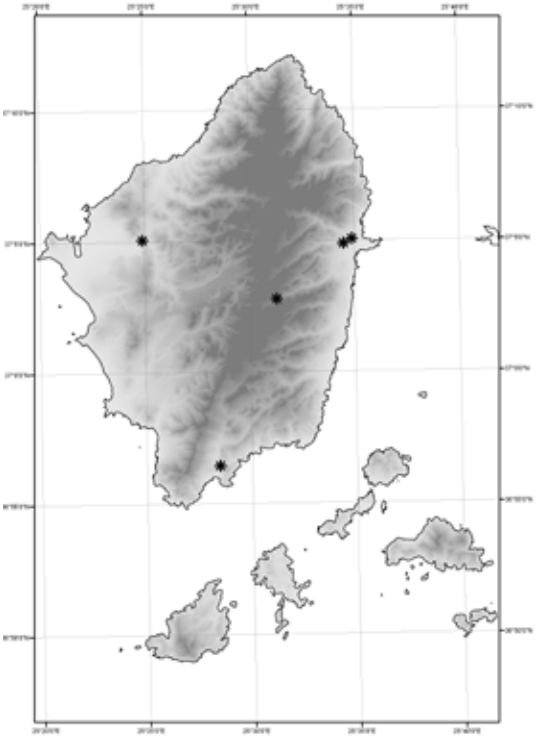

Fig. 8 - Sites of the relevés of the habitat type Southern riparian galleries and thickets (*Nerio-Tamaricetea* and S*ecurinegion tinctoriae*) (92D0).

Vegetated sea cliffs of the Mediterranean coasts with endemic* Limonium *spp. (habitat code: 1240)

The halophytic vegetation on coastal cliffs sprayed by seawater is assigned to the class *Crithmo-Staticetea* (Mucina, 1997). This vegetation type typically inhabits Mediterranean rocky shores and shows an open and irregular structure. According to Mayer (1995), it represents one of the few well preserved natural habitat types, which are rather inviolate by human activities. Most of the plants on maritime cliffs and slopes are highly specialised and feature halophilous and xerophilous adaptations, as the high concentration of salt in the soil, the protracted exposure to sun and the weather phenomena -wind is one of the most important- are among the main environmental limitations. This pioneering vegetation remains stable over time because environmental conditions cannot change to enable, for example, maquis or even just garrigue to establish.

The halophytic communities of the class *Crithmo-Staticetea* recorded on the investigated maritime rocks and slopes are the following: a community dominated by *Frankenia hirsuta* and *Limonium graecum* - the most common in the area- and the association *Limonio-Cichorietum spinosi* (Tab. 8). Taking into account the statement of Mayer (1995) who pointed out that the alliance *Crithmo-Frankenion hirsutae* is the only one of the class *Crithmo-Staticetea* that occurs in the eastern Mediterranean, the communities found on coastal rocks and cliffs of the investigated area belong to this syntaxon. *Frankenia hirsuta* is the local characteristic and differential species of this syntaxon. Lovrić & Rac (1991) indicated that in Greek and Turkish coastal areas the alliance *Crithmo-Malcolmion* substitutes the *Crithmo-Staticion* which according to Mayer (1995) is restricted only to the western Mediterranean. Communities with *Cichorium spinosum* from the eastern Mediterranean areas are assigned either to *Crithmo-Staticion* (Bolòs *et al*., 1996) or to *Crithmo-Malcolmion* (Zervou, 2011). Panitsa *et al*. (2004) included the *Limonio-Cichorietum spinosi* within the alliance *Crithmo-Frankenion hirsutae*.

Sublittoral zone of the islets of the Aegean (habitat code: 1260**)

This habitat type that includes phryganic-halophytic and chasmo-halophytic communities thriving in the epilittoral islets zone is generally scattered in Greece and rare in the Natura 2000 sites. It represents one of the (30) additional Hellenic habitat types which are not included in Annex I of the EU Habitats Directive (Dimopoulos *et al*., 2006). The halo-subnitrophilous vegetation of the class *Stellarietea mediae* encountered on coastal calcareous micro-ledges and shaded steep cliffs of Keros island and on rocky coasts of Shinousa island we consider that they correspond to this habitat type. In Keros island this habitat type was characteri-

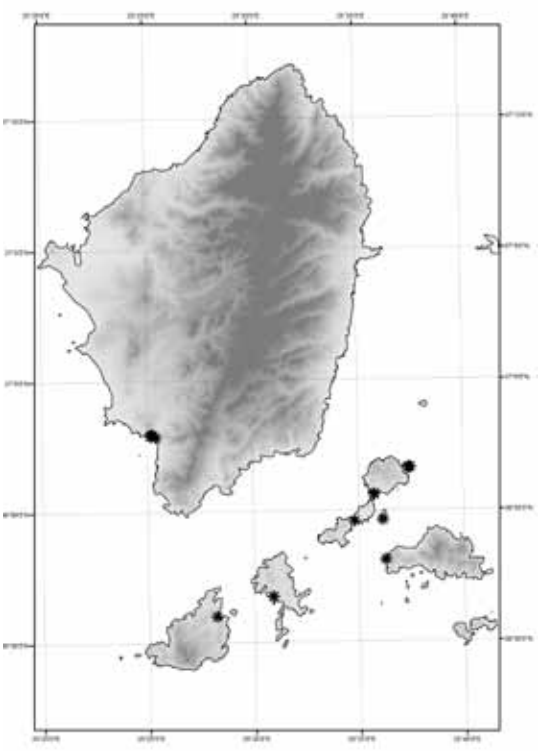

Fig. 9 - Sites of the relevés of the habitat type Vegetated sea cliffs of the Mediterranean coasts with endemic *Limonium* spp. (1240).

zed by species such as *Theligonum cynocrambe, Parietaria lusitanica*, *Mercurialis annua* and *Valantia muralis* (Tab. 2), all diagnostic of the order *Geranio purpurei-Cardaminetalia hirsutae*, which was first described by Brullo & Marcenò (1985), and it is included in the class *Stellarietea mediae*. The vegetation ascribed to this order groups sciaphilo-subnitrophilous annual plant communities of natural and semi-natural habitats dominated by microphytes that colonize small niches and micro-ledges on substrata rich in organic matter, accumulating on stone-walls, shaded rocks and initial soils (Brullo *et al*., 2007). According to the bioclimatic classification proposed by Rivas-Martinez *et al*. (2004a, b) this vegetation occurs within the thermo- and mesomediterranean thermotypes, with dry to humid ombrotypes. Its range comes all over the Mediterranean basin and it stretches northwards and westwards up to the southern temperate and Atlantic region. Communities of this vegetation type are mentioned by Brullo *et al*., (2007) from shaded and nitrified rock habitats far from the sea at higher elevation in Greek islands of Rodos and Naxos. On the other hand Deil & Hammoumi (1997) reported from coastal limestone massif of the Central Rif Mountains (Morocco) a *Mercurialis annua-Theligonum cynocrambe* community colonizing shady and nitrified rock fissures. They assigned this community to the order *Geranio purpurei-Cardaminetalia hirsutae*, and pointed out its vicinity to the chasmophytic communities of the class *Asplenietea trichomanis*. This vicinity, which was also observed on coastal cliffs of Keros island, permits the occurrence of chasmophytic species such as *Selaginella denticulata* and *Asplenium ceterach* both in community described from Moroccan coasts and in community found in the investigated central Aegean islet. Thereby the presence of chasmophytic species within this sciaphilo-subnitrophilous vegetation that thrives in coastal rocky niches and micro-ledges admits the characterization of it as chasmo-halophytic too and its matching in habitat code 1260.

Besides the above described community a *Mesembryanthemum nodiflorum* dominated formation was also found on coastal cliffs of Shinousa island (Tab. 8). Costa *et al*. (1996) and Biondi *et al*. (2014) attributed the *Mesembryanthemum nodiflorum* dominated communities to the order *Chenopodietalia muralis*, alliance *Mesembryanthenion crystallini* (class *Stellarietea mediae*) which includes Mediterranean nitrophilous communities, that grows in habitats rich in organic matter. In turn Mucina (1997) considered this species as diagnostic of the class *Saginetea maritimae* which includes therophytic, halo-subnitrophilous communities, populating loamy and sandy soils in habitats under salt-spray influence (rocky coasts and salt mar-

Fig. 10 - Sites of the relevés of the Greek habitat type Sublitoral zone of the islets of the Aegean (1260).

shes) of the Mediterranean area and temperate Atlantic Europe, where they constitute a mosaic with perennial communities of the *Crithmo-Staticetea*, *Juncetea maritimi*, *Sarcocornietea fruticosae*. Although the community found in Shinousa is difficult to be classified safety into superior syntaxonomic ranks because it is very poor in species, we suggest its assignment within the *Chenopodietalia muralis*.

Annual vegetation of drift lines (habitat code: 1210)

This habitat type was encountered as a fragmented zone in two small sandy beaches of the study area (Tab. 9). It was exclusively represented by floristically poor and scattered stands of *Cakile maritima*. The diagnostic species *C. maritima* was accompanied by few taxa, such as *Elytrigia juncea* and *Matthiola tricuspidata*, originating from adjacent communities. The sandy coastal system usually begins with nitrophilous annual plant communities dominated by *Cakile maritima* and/or *Salsola tragus* which inhabit the strandline zone, starting the dune building. They thrive on substrates rich in sea salts and organic matter in decomposition (drift-line). They are also exposed to wave inundation, wind stress and are often patchy and fragmented (Prisco *et al*., 2012). These communities are consisted of few species resilient to the disturbance caused by sand mobility and salt spray and are grouped within the *Cakiletea maritimae* class. This specific class contributes to the formation of embryo dunes and is followed by dunes dominated by dune-forming plants such as *Elytrigia juncea* (Seabloom & Wiedemann, 1994, Nordstrom *et al*., 2009).

Embryonic shifting dunes (habitat code: 2110)

Coastal dunes hold one of the most ecologically remarkable ecosystems on earth. The influence of the sea generates a strong sea-inland environmental gradient which shapes the vegetation features of the coastal dune system. Plant communities are often arranged along a sea-inland zonation (Doing, 1985; Feola *et al*., 2011) that increases the high values of biodiversity in terms of habitat richness and species of interest (Brullo *et al*., 2001; Acosta *et al*., 2003; van der Maarel, 2003; Biondi, 2007). However, at present, dune environments are considered to be threatened worldwide (McLachlan & Brown, 2006).

The embryonic shifting dunes are of exceptional importance as an indicator of the general structural and functional 'health' of a dune system. They involve constant sand deposition by wind in relatively flat beach complexes, influenced by salt or brackish water. Their vegetation that is assigned to the *Euphorbio paraliae-Ammophileta australis* class (*Ammophiletalia australis*, *Agropyrion juncei*) promotes the first accumulations of sand that then grow to increased heights (as the mobile dunes) (Biondi & Galdenzi, 2014). However, it is transient and will either be displaced by shifting dunes with *Ammophila arenaria* ("white dunes") or washed away by storms.

Fig. 11 - Sites of the relevés of the habitat type Annual vegetation of drift lines (1210).

The association *Cypero mucronati-Agropyretum juncei* that includes open grass formations, poor in species, dominated by *Elytrigia juncea* and *Eryngium maritimum* was encountered in the investigated areas and in most cases it was characterized by the constant presence of *Medicago marina* (Tab. 10). The above mentioned species are diagnostic of the alliance *Agropyrion juncei* (order *Ammophiletalia australis*, class *Euphorbio paraliae-Ammophiletea australis*). According to Sýkora *et al*., (2003) this syntaxon is endangered, it occurs at the highest part of the beach as pioneer vegetation on the first embryo dunes (*duni embryonales fundati* sensu van Dieren 1934) and it is sporadically inundated by the sea water during storm. They also noted that the species *Medicago marina* is highly frequent all over the *Cypero mucronati-Agropyretum juncei* relevés reported from Greece. Lavrentiades (1964) demonstrated that in the coasts of western Peloponnisos this community grows especially on dunes up to 1 - 2 meters high and that its development depends particularly on the direction and exposure of the coasts to the SW winds. Bibliographic records concerning this dune-colonising vegetation are more frequent from coastal regions of mainland (Lavrentiades 1963, 1964, 1976; Pavlidis, 1976 a, b; Georgiadis *et*

al., 1990; Karagianni *et al*., 2008; Spanou *et al*., 2006) than from insular Greece (Géhu *et al*., 1987; Biondi, 1989; Mayer, 1995; Brofas *et al*., 2001; Vallianatou, 2005). The community is also known from Cyprus (Géhu *et al*., 1984; 1990b), Spain (Díez *et al*., 1975), Italy (Gratani, 1987; Giusso Del Galdo *et al*., 2008; Di Pietro *et al*., 2009; Tomaselli *et al*., 2011), Albania (Imeri *et al*., 2010) and Turkey (Géhu & Uslu, 1989; Karaömerlioglou, 2007).

Shifting dunes along the shoreline with* Ammophila arenaria *(white dunes) (habitat code: 2120)

The increase of dune height is accompanied by gradual change of the vegetation physiognomy. The highest dunes, that are at least 1 m high, are usually colonized by big tufts of the species *Ammophila arenaria* which represent the vegetation of yellow, very permeable and humus poor mobile sand-dunes (Oberdorfer 1952, Lavrentiades 1964, Sýkora *et al*., 2003). This vegetation is the real builder of the dunes as it is an important factor in impeding the movement of sand quantities pushed away by the sea winds towards the continent. Along the western shoreline of Naxos, in places not intensely disturbed by human activities *Ammophila arenaria* along with *Medicago marina* consist the sand-dune formations land-wards of the *Cypero mucronati-Agropyretum juncei*. *Eryngium maritimum, Elytrigia juncea* and *Euphorbia paralias* all diagnostic

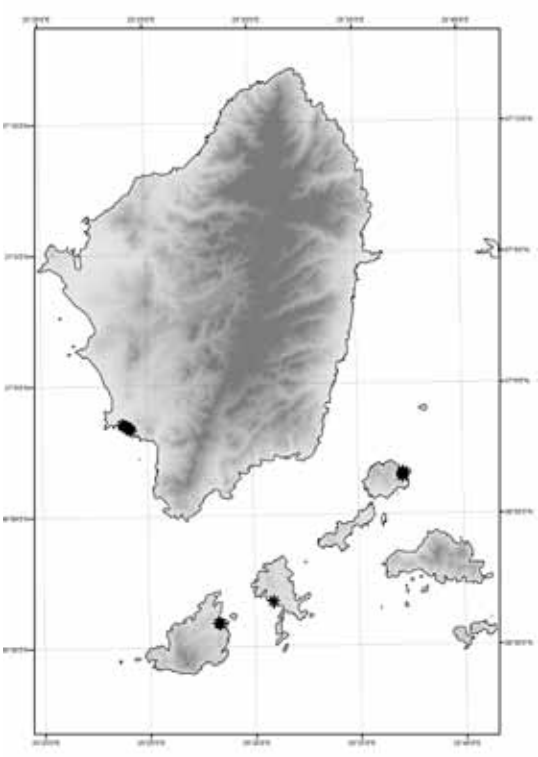

Fig. 12 - Sites of the relevés of the habitat type Embryonic shifting dunes (2110).

species of the order *Ammophiletalia australis* (class *Euphorbio paraliae-Ammophiletea australis*), were constantly associated with this community throughout its range in the study area (Tab. 10). The association *Medicagini marinae-Ammophiletum australis* known from Sithonia (Pavlidis 1976b), Kriti (Géhu *et al*., 1987) and many coastal areas of western Greece (Lavrentiades 1964, Georgiadis *et al*., 1990, Karagianni *et al*., 2008, Spanou *et al*., 2006) significantly resembles to the investigated phytocoena in Naxos which were dominated by the same species. Besides Greece the *Medicagini marinae-Ammophiletum australis* is distributed in Spain (Díez *et al*., 1975), Italy (Gratani 1987; Di Pietro *et al*., 2009; Giusso Del Galdo *et al*., 2008; Tomaselli *et al*., 2011), Albania (Imeri *et al*., 2010) and Turkey (Géhu & Uslu, 1989). There are no previous records of this community from insular Greece.

Stands co-dominated by *Medicago marina* and *Ononis variegata* were also encountered on the investigated shifting dunes (Tab. 11). They develop sporadically close to the association *Medicagini marinae-Ammophiletum australis* usually at the edges of dunes towards the sea. Literature data reveal that *O. variegata* which is diagnostic of the *Euphorbio paraliae-Ammophiletea australis* class, occupies the natural gaps of other perennial psammophilous communities of embryo or mobile dunes, replacing them in many cases especially when they are eliminated due to human pressure (Staniski *et al*., 2004; Acosta *et al*., 2000, 2007; Géhu & Biondi, 1994). Georgiadis *et al*. (1990) recorded this taxon amongst the species inhabiting the mobile dunes of the Strofilia coastal area.

The loss of plant species that trap and hold sand, makes the beach more vulnerable to wind and erosion, a fact frequently underlined in the literature (Adriani & Terwindt, 1974; van der Maarel, 1993). It is evident that the maintenance of typical sand dune vegetation is essential especially in Mediterranean sandy coastlines which are under threat of extensive erosion and increased human activities (van der Maarel, 1979b; De Lillis, 1998; Dean & Dalrymple, 2002). It is estimated that at present ca. 75% of the sandy Mediterranean coasts are degraded (Géhu, 1985; Salman & Strating, 1992).

Malcolmietalia *dune grasslands (habitat code:2230)*

In the investigated area this habitat type was poorly represented by small stands of *Matthiola tricuspitada* and *Pseudorlaya pumila* (Tab. 9). This vegetation belongs to the order *Cutandietalia maritimae* that has been proposed within the concept of the class *Thero-Brachypodietea* (Rivas-Martínez *et al*., 2002) and includes ephemeral plant communities of coastal sand and dunes with salt spray spreading mostly in the eastern Mediterranean basin. Their optimum is the thermo-Mediterranean zone with semiarid to sub-humid

Tab. 7 - *Nerium oleander-Vitex agnus-castus* comm. (rels. 1-5).

Relevé N.	1	2	3	4	5	
Relevé N. (dendrogram of Fig. 4)	62	63	64	65	66	
Plot size (m^2)	50	100	100	100	100	
Total cover (%)	80	90	90	100	100	
Exposure	0	SSE	ENE	SW	E	
Slope (°)	0	0	0	0	0	
Species N.	16	20	23	11	13	
Character species of the association						
Nerium oleander	4	5	4	5	.	IV
Vitex agnus-castus	.	.	.	.	4	II
Character species of *Stellarietea mediae*						
Campanula erinus	2m	+	.	.	1	IV
Anogramma leptophylla	2m	.	.	.	.	II
Saxifraga hederacea	2b	.	.	.	.	II
Bromus madritensis	.	.	1	1	.	III
Anagallis arvensis	.	+	.	.	.	II
Sedum littoreum	+	.	.	.	.	II
Scandix pecten-veneris	.	+	r	.	.	III
Mercurialis annua	.	.	+	.	.	II
Theligonum cynocrambe	.	.	+	.	.	II
Avena barbata	.	.	+	.	.	II
Bromus sterilis	.	.	1	.	.	II
Character species of *Thero-Brachypodietea*						
Cynosurus echinatus	.	1	1	1	.	IV
Brachypodium distachyon	.	1	1	.	.	III
Trifolium campestre	.	1	.	.	.	II
Catapodium rigidum	.	1	.	.	.	II
Plantago lagopus	.	r	.	.	.	II
Plantago afra	.	+	.	.	.	II
Hedypnois rhagadioloides	.	+	.	.	.	II
Galium murale	.	+	.	.	.	II
Tordylium apulum	.	.	2m	.	.	II
Briza maxima	.	.	r	.	.	II
Valantia hispida	.		.	1	.	II
Silene colorata	.	.	.	+	.	II
Lagurus ovatus	.	.	.	.	1	II
Other species						
Parietaria judaica	2m	1	1	1	2m	V
Arum italicum	1	+	1	+	3	V
Torilis nodosa	+	+	.	+	.	III
Lagoecia cuminoides	+		2m		2m	III
Ballota acetabulosa	+	.	+	.	.	III
Oxalis pres-capre	+	+	.	.	.	III
Urtica pilulifera	.	2m	.	2m	.	III
Hordeum murinum	.	+	1	.	+	III
Euphorbia peplis	.	+	.	+	.	III
Geranium purpureum	.	.	1	+	.	III
Geranium rotundifolium	.	.	1	r	.	III
Rumex pulcher	.	r	.	.	.	II
Rostraria cristata	.	+	.	.	+	II
N. of accidental species	5	0	6	0	6	

Tab. 8 - *Frankenia hirsuta-Limonium graecum* comm. (rels. 1-7), *Limonio-Cichorietum spinosi* (Knapp 1965) Géhu *et al*. 1987 (rels. 8-11), *Mesebrianthemum nodiflorum* comm. (rel.12).

Relevé N.	1	2	3	4	5	6	7		8	9	10	11		12
Relevé N. (dendrogram of Fig. 4)	32	33	34	35	36	37	38		39	40	41	42		43
Plot size (m^2)	20	20	20	20	20	20	10		20	20	20	20		15
Total cover (%)	30	10	80	50	70	40	10		20	40	30	20		50
Exposure	WSW	ESE	0	SW	SW	SW	SE		ESE	W	SW	SW		SSW
Slope (°)	0	1	0	0	1	1	1		1	1	0	1		0
Species N.	8	18	7	11	17	11	4		11	9	8	10		10
Character species of the associations														
Limonium graecum	3	4	1	4	1	3	2m	.	.	.	.	.		+
Frankenia hirsuta	2m	r	1	3	3			IV	.	.	.	.	.	.
Cichorium spinosum	.	.	+	.	.	.	.	I	2a	3	3	3	V	.
Limonium virgatum	.	.	.	.	.	.	.	.	2b	1			III	.
Mesebryanthemum nodiflorum	.	.	.	.	.	.	.	.	.	.	.	.	.	4
Character species of *Crithmo-Staticetea*														
Lotus cytisoides	r	+	.	2m	1	.	+	IV	1	+	.	r	IV	3
Malcolmia flexuosa	+	.	.	1	2b	.	.	III	.	r	.	.	II	.
Anthemis rigida	.	2m	.	2b	3	.	.	III	.	.	.	+	II	.
Reichardia picroides	.	+	1	.	r	.	+	III	.	.	.	.	.	1
Silene sedoides	.	.	.	.	.	+	.	I	.	.	.	.	.	2m
Crithmum maritimum	.	.	.	.	.	.	+	I	r	.	.	.	II	.
Parietaria cretica	.	.	.	.	.	2b	.	I	.	.	.	.	.	.
Helichrysum stoechas subsp. barrelieri	.	.	.	.	.	.	.	.	.	.	2a	.	II	.
Character species of *Saginetea maritimae*														
Plantago weldenii	2m	2m	.	1	3	.	.	III	.	.	.	+	II	.
Sedum litoreum	.	.	.	+	+	1	.	III	+	.	.	.	II	.
Catapodium marinum	.	.	.	.	1	1	.	II	+	+	.	.	III	.
Other species														
Podospermum canum	.	.	.	2b	+	.	.	II	.	r	2m	+	IV	.
Taraxacum sp.	.	1	.	+	.	2m	.	III	.	.	.	.	.	.
Senecio vulgaris	r	1	.	.	.	+	.	III	r	.	.	.	II	.
Dactylis glomerata	.	3	+	.	.	.	.	II	.	.	2m	2b	III	.
Trifolium scabrum	.	+	.	.	.	.	.	I	.	1	1	2m	IV	.
Allium sp.	+	1	.	.	.	.	.	II	.	.	.	.	.	.
Phleum exaratum	.	2b	.	2b	.	.	.	II	.	.	.	.	.	.
Salsola soda	.	.	.	1	2b	.	.	II	.	.	.	.	.	.
Valantia muralis	.	.	.	.	1	2b	.	II	2m	+	.	r	IV	.
Phleum exaratum subsp. aegaeum	.	.	.	.	.	.	.	.	.	2m	+	.	III	.
Brachypodium distachyon	.	.	.	.				.		.	+	1	III	.
N. of accidental species	1	5	2	0	5	3	0		3	0	1	1		6

Tab. 9 - *Cakile maritima* comm. (rel. 1), *Matthiola tricuspidata-Pseudorlaya pumila* comm. (rels. 2-3).

Relevé N.	1	2	3	
Relevé N. (dendrogram of Fig. 4)	32	30	31	
Plot size (m^2)	20	30	20	
Total cover (%)	50	30	30	
Exposure	SSW	S	S	
Slope (º)	1	1	1	
Species N.	4	11	7	
Character species of the associations				
Cakile maritima	3	.	.	.
Matthiola tricuspidata	+	2a	3	V
Pseudorlaya pumila	.	3	2a	V
Character species of *Thero-Brachypodietea*				
Medicago littoralis	.	4	r	V
Hedypnois rhagadioloides	.	2m	.	III
Lagurus ovatus	.	.	.	.
Echium arenarium	.	2m	r	V
Valantia hispida	.	+	.	.
Other species				
Elytrigia juncea	+	.	.	.
Cynodon dactylon	.	1	+	V
Reichardia picroides	.	+	.	III
Lotus cytisoides	.	r	.	III
Carlina corymbosa	.	r	.	III
Rumex sp.	.	+	.	III
Malva sylvestris	.	.	r	III
Salsola tragus	.	.	r	III

ombrotypes. They usually represent a therophytic element between the perennial vegetation of *Euphorbio paraliae-Ammophiletea australis*. On altered and nitrified soils these communities evolve annual, nitrophilous communities belonging to the *Stellarietea mediae* (Díez-Garretas *et al*., 2003).

Mediterranean and thermo-Atlantic halophilous scrub (*Sarcocornietea fruticosae*) (habitat code: 1420)

This vegetation type of semi-woody shrubs and perennial halophytes that thrives on sea water logged muddy substrates, is classified as *Sarcocornietea fruticosae* and it was found in scattered, poor in species stands, dominated by *Sarcocornia perennis* or *Suaeda vera* (Tab. 12). Both species are diagnostic of the order *Sarcocornietalia fruticosae*. We consider *Sarcocornia perennis* stands found in the study area as segments of the *Sarcocornia perennis-Halimione portulacoides* community that has been frequently reported from several coastal territories of Greece (Wolff, 1968; Babalonas, 1979; Sarika, 2012) and Turkey (Altinözlü, 2004). We also consider *Suaeda vera* dominated relevés as representatives of the *Suaedetum verae* association which is widely distributed in the Mediterranean, sometimes under the names *Suaedetum fruticosae* (Trinajstić, 2009) or *Halimiono portulacoidis-Suaedetum verae* (Attore *et al*., 2004). Nevertheless we must note that in literature these syntaxa are generally more diverse.

The perennial grass *Aeluropus littoralis* was the dominant species of several stands (Tab. 12) encountered in the western sandy coasts of Naxos. It was close to the communities of Mediterranean and thermo-Atlantic halophilous scrub (*Sarcocornietea fruticosae*) or between the communities of shifting dunes (*Euphorbio paraliae-Ammophiletea australis*) and of *Malcolmietalia* dune grasslands (*Thero-Brachypodietea*) as well as nearby to communities of Mediterranean salt meadows (*Juncetea maritimi*). Aeluropus littoralis is widespread mostly in the Mediterranean and Black Sea coasts and is usually listed as a diagnostic species of the *Juncetea maritimi* (Mucina, 1997). However its phytosociological position is not very clear as it frequently varies to a significant extent. The communities that it forms may consist of diagnostic species of the

Fig. 13 - Sites of the relevés of the habitat type Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) (2120).

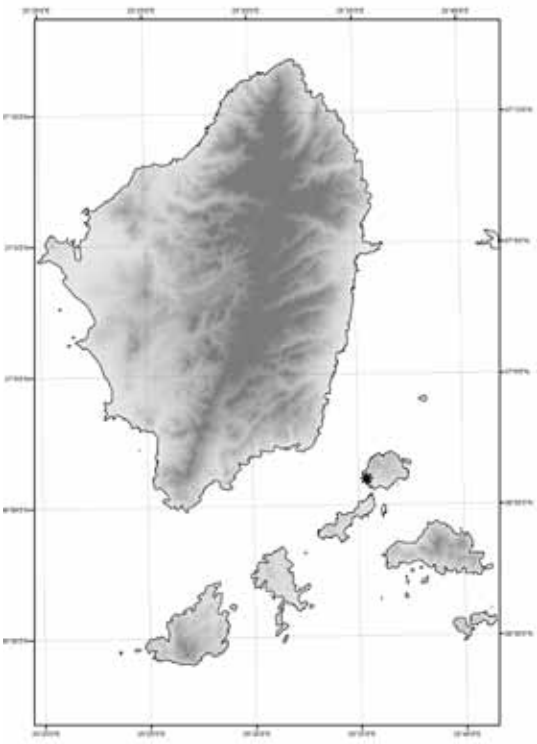

Fig. 14 - Sites of the relevés of the habitat type *Malcolmietalia* dune grasslands (2230).

Juncetea maritimi (Rivas-Martínez *et al*., 2001; Cazzin *et al*., 2009; Theurillat & Moravec, 1998; Făgăras *et al*., 2003; Karaömerlioglou, 2007). However, there are cases in which their physiognomy is designated by species of the *Sarcocornietea fruticosae* (Babalonas, 1979; Vasiliou *et al*., 2000; Tzonev *et al*., 2008; Krausch, 1965; Géhu *et al*., 1994; Pop, 2002; Dubyna & Neuhäuslová, 2000), *Festuco-Puccinellietea* (Tzonev *et al*., 2008) or *Thero-Brachypodietea* (Sarika, 2012). In the study area the *Aeluropus littoralis* community is mainly associated with species that belong to the *Thero-Brachypodietea*, *Saginetea maritimae* and *Euphorbio paraliae-Ammophiletea australis* (Tab. 9).

Mediterranean salt meadows* (Juncetalia maritimi*) (habitat code: 1410)

The *Juncetalia maritimi* grasslands that flourish on subsaline soils of the Mediterranean coastal and inland wetlands are the main vegetation constituents of this habitat type. At these lands various species of the genus *Juncus* grow plentifully and form communities on the transitional zone between the upper salt marsh zone and the upland vegetation, on sites where salt and fresh phreatic water mix (Rivas-Martínez *et al*., 1980). These communities are usually dominated by *Juncus acutus* and/or *J. maritimus* whilst stands dominated by *J. heldreichianus* such as those found in the investigated area (Tab. 13) are reported less frequently in literature. A similar but more diverse *J. heldreichianus* community has been recently reported from coastal wetland areas of eastern continental Greece (Sarika, 2012). There are also records demonstrating the presence of *J. heldreichianus* dominated tufts within the tall humid herb grasslands of the *Molinio-Holoschoenion vulgaris* (Karagianni, 2009) or in degrading fixed coastal dunes (Vitsou-Labraki *et al*., 2008). Yurdakulol *et al*. (1996) mentioned the association *Cardopatio-Juncetum heldreichianii* from salt marshes formed in closed basins at the inner parts of Turkey considering that it belongs to the order *Juncetalia maritimi*.

Estuaries (habitat code:1130), Coastal lagoons (habitat code: 1150*)

Submerged monotypic communities consisting of *Ruppia maritima* or of *Stuckenia pectinata* were encountered in near shore aquatic habitats exposed to excessive salinity (Tab. 14). The species *Ruppia maritima* was found at the outfall of a rivulet in the western coastline of Naxos (near Pirgaki village). On the other hand, *Stuckenia pectinata* was found in a pond occurring at the edges of a coastal wetland area expanded behind sand dune formations in the southern part of Naxos (Kalantos beach). *Ruppia maritima* mostly thrives in temporarily to permanently flooded mesohaline-

Tab. 10 - *Cypero mucronati-Agropyretum juncei* (Kuhnhaltz-Lordat 1923) Br.-Bl. 1933 (rels. 1-11), *Medicagini marinae-Ammophiletum australis* Br.-Bl. 1921 *corr.* Fernández Prieto & T.E. Diaz 1991 (rels. 12-17).

Relevé N.	1	2	3	4	5	6	7	8	9	10	11		12	13	14	15	16	17	
Relevé N. (dendrogram of Fig.	8	9	10	11	12	13	17	25	14	15	16		18	19	20	21	22	23	
Plot size (m^2)	20	20	20	20	20	20	20	15	30	20	20		20	30	30	30	20	30	
Total cover (%)	80	70	70	50	60	70	70	70	70	70	80		70	50	80	70	70	70	
Exposure	NNW	SSE	SW	SE	NNE	WSW	0	SE	W	ENE	ENE		0	0	SSE	NE	NE	W	
Slope (°)	1	1	1	1	1	1	0	1	4	2	1		0	0	3	1	1	2	
Species N.	5	7	5	4	6	9	14	5	7	5	4		14	7	16	3	6	7	
Character species of the associations																			
Elytrigia juncea	1	3	2m	1	4	2b	.	2b	2m	4	5	V	3	.	3	.	2b	3	III
Eryngium maritimum	1	1	2a	1	+		r	.	r	1	2m	V	1	r	r	r	1	2m	V
Ammophilla arenaria	.	.	.	.	.	.	+	.	.	.	.	I	4	4	4	4	4	4	V
Medicago marina	4	2b	3	2m	2a	4	4	.	.	.	.	IV	2m	+	2a		2m	1	V
Character species of *Ammophiletea*								.											
Euphorbia parallias	.	.	.	.	.	.	r	.	.	1	1	II	1		+	.	1	+	IV
Achillea maritima	.	.	.	.	.	.	.	.	4	.	.	I	.	.	2a	.	.	.	I
Pancratium maritimum	.	.	1	3	.	.	.	r	.	.	.	II	.	.	.	.	.	.	.
Character species of *Thero-Brachypodietea*								.											
Pseudorlaya pumila	2m	2b	.	.	1	2m	2a	1	r	+	+	IV	2b	+	2a	.	r	+	V
Medicago littoralis	.	.	.	.	.	1	.	.	.	.	.	I	.	.	.	.	.	.	.
Hedypnois rhagadioloides	.	.	.	.	.	2b	2m	.	.	.	.	I	.	.	.	.	.	.	I
Silene colorata	.	.	.	.	.		+	.	.	.	.	I	.	.	1	.	.	.	II
Matthiola tricuspidata	.	.	.	.	.	3	r	.	.	.	.	I	.	+	2m	.	.	.	III
Cutandia maritima	.	.	.	.	.	.	.	.	2b	.	.	I	1	.	1	.	.	.	II
Other species																			
Hyoseris lucida	3	.	.	.	1	.	.	.	.	.	.	I	1	+	1	.	.	.	III
Cakile maritima	.	.	+	.	+	2a	.	2a	.	.	.	II	.	r	.	.	.	.	I
Hordeum marinum	.	.	.	.	.	.	3	.	.	.	.	I	.	.	2b	.	r	.	III
Echinophora spinosa	.	.	.	.	.	.	1	.	.	.	.	I	+	.	2m	.	.	.	III
N. of accidental species	-	3	-	-	-	2	4	1	2	1	-		5	-	3	1	-	1	

hyperhaline estuarine wetlands which have a greater range of salinity than the one that is tolerated by any other submerged angiosperm. However, it is likely at a competitive disadvantage among specialist taxa in soft or acid waters (Kantrud, 1991). *Stuckenia pectinata* that is amongst the most important competitors of *Ruppia maritima* is a very phenoplastic species, that usually occurs in inland freshwaters, but it can grow equally well in slightly brackish waters where the salinity does not exceed 6 ‰ (van Wijk *et al*., 1988). Both species are cosmopolitan. In Europe and in the Mediterranean region *Stuckenia pectinata* is often found in brackish waters (Grillas, 1990; van Wijk *et al*., 1994; Ninot *et al*., 2000; Imeri *et al*., 2010), while *Ruppia maritima* having a pronounced salinity tolerance mostly inhabits river deltas, lagoons, ponds and other coastal environments subject to tidal influence (Verhoeven, 1977; Ninot *et al*., 2000). In Greek littoral wetlands these species are rather common as they are frequently reported (Wolff, 1968; Babalonas, 1979; Georgiadis *et al*., 1990, 1997; Malea *et al*., 2004; Sarika *et al*., 2005; Christia *et al*., 2011; Sarika, 2012). It must also be noted that *Ruppia maritima* is widely distributed in Naxos (Langagen, 2004).

Fragmented and not widely expanded formations of the class *Phragmito-Magno-Caricetea* dominated by the common reed *Phragmites australis* or by the tall helophyte *Schoenoplectus litoralis* (Tab. 14) were also encountered in the western coastline of Naxos, at the rivulet outfall near Pirgaki and at the coastal wetland area of Ajassos. We consider *Phragmites australis* stands as segments of the association *Phragmitetum communis* (alliance *Phragmition communis*) and those of *Schoenoplectus littoralis* as segments of the association *Scirpetum compacto-litoralis* (alliance *Cirsio brachypetali-Bolboschoenion*) which is rarely mentioned from coastal wetlands of Greece (Wolff, 1968; Babalonas, 1979) or other geographically more distant areas. The *Scirpetum compacto-litoralis* is known from southern France and Dalmatia (Braun-Blanquet *et al*., 1952), Spain (Ninot *et al*., 2000; Molina & Moreno, 2003), Italy (Braun-Blanquet *et al*., 1952; Pignatti, 1966; Filigheddu *et al*., 2000; Frondoni & Iberite, 2002; Attore *et al*., 2004) and Egypt (Tadros & Atta, 1958). In Spain and Italy its typical form is designated by the constant and usually single presence

Fig. 15 - Sites of the relevés of the habitat type Mediterranean and thermo-Atlantic halophilous scrub (*Salicornietea fruticosae*) (1420).

Fig. 16 - Sites of the relevés of the habitat type Mediterranean salt meadows (*Juncetalia maritimi*) (1410).

of *Bolboschoenus maritimus*. *Schoenoplectus littoralis*, that is almost totally absent from this form, constitutes a clearly diversified subassociation in Spain (*Schoenoplectetosum litoralis*) which consists either of monospecific *Schoenoplectus littoralis* stands or of *Bolboschoenus maritimus-Schoenoplectus littoralis* co-dominated stands (Ninot *et al*., 2000). In Greece related syntaxa are reported from Kriti (Gradstein & Smittenberg, 1977), NW Peloponnese (Georgiadis *et al*., 1990) and Epirus (Karagianni *et al*., 2008). The association *Scirpetum compacto-litoralis* also occurs in the coastal wetland area of Shinias (north eastern part of Attiki) consisting of an extensive mosaic of pure *Bolboschoenus maritimus* stands alternated with mixed *Bolboschoenus maritimus-Schoenoplectus littoralis* dominated tufts (personal observation).

Mediterranean temporary ponds (habitat code: 3170*)

Temporary ponds are unusual habitats characteristic of climatic conditions typified by long dry seasons, in the Mediterranean region and also in various parts of the world which are subject to more or less arid climates. They often shelter many rare and threatened species and are very vulnerable due to their shallow depth and their frequently small surface area (Grillas, 2004). Thereby they are considered priority habitats according to the Natura 2000 network of the European Union (Habitats Directive 92/43/ EC). They are neither truly aquatic nor truly terrestrial habitats, and their drying up for a sufficiently long period of time provides the elimination of plant communities that are usually widespread in permanent wetlands. The alternating phases of flooding and drying out, as well as their isolation, favour the establishment of unique and diverse Mediterranean semi-aquatic vegetation of the class *Isoeto-Nano-Juncetea*. Within this class, which comprises hygrophilous herbaceous ephemeral plant-communities linked to periodically submerged soils two orders are recognized: the *Isoetetalia*, distributed mainly in the Mediterranean territory, and the *Nanocyperetalia* having its optimum in the Central and Atlantic Europe, entering marginally in the Mediterranean area.

The temporary pond encountered in the study area was almost dried up in late spring and its bottom was covered by the semi-aquatic species *Callitriche brutia*. *Lythrum hyssopifolia* and *Juncus bufonius* both diagnostic species of the class *Isoeto-Nano-Juncetea* were also sporadically present (Tab. 14). *Callitriche brutia* is amongst the most commonly observed plant species in Greek temporary ponds (Zacharias *et al*., 2007). The communities that it forms such as the *Isoeto tigulianae-Callitrichetum brutiae* (Bagella *et al*., 2009) and

Tab. 11 - *Medicago marina-Ononis variegata* comm. (rels. 1-7).

Relevé N.	1	2	3	4	5	6	7	
Relevé N. (dendrogram of Fig. 4)	1	2	3	4	5	6	7	
Plot size (m^2)	50	20	20	20	30	20	20	
Total cover (%)	65	70	70	60	75	50	40	
Exposure	S	S	NNW	SSE	0	S	S	
Slope (º)	0	1	1	1	0	0	0	
Species N.	11	11	5	2	10	7	5	
Character species of the association								
Medicago marina	2b	2m	4	r	2b	+	2a	V
Ononis variegata	1	1	2a	3	1	.	.	IV
Elytrigia juncea	1	r	.	.	.		.	II
Character species of *Thero-Brachypodietea*								
Pseudorlaya pumila	+	1	2b	.	2m	+	.	IV
Medicago littoralis	.	.	.	.	1	2b	.	I
Hedypnois rhagadioloides	.	2m	.	.	1	.	.	II
Silene colorata	.	1	.	.	.	.	.	I
Matthiola tricuspidata	.	.	r	.	.	.	.	I
Character species of *Ammophiletea*								
Helichrysum italicum	3	.	.	.	2a	.	.	II
Achillea maritima	.	.	.	.	.	.	r	I
Other species	.	.	.	.	.	.	.	
Scirpoides holoschoenus	2m	2m	.	.	2m	.	.	III
Silene sartorii	2m	1	.	.	2m	.	.	III
Echium angustifolium	r	3	.	.	.	.	.	II
Reichardia picroides	r	.	.	.	.	.	.	I
Lotus edulis	r	.	.	.	.	.	.	I
Orobanche sp.	1	.	.	.	.	.	.	I
Crypsis aculeata	+	.	.	.	.	.	.	I
N. of accidental species	3	2	1	0	2	4	3	

Tab. 12 - *Suaeda vera* comm. (rels. 1-2), *Sarcocornia perennis* comm. (rels. 3-4), *Aeluropus littoralis* comm. (rels. 5-8).

Relevé N.	1	2		3	4		5	6	7	8	
Relevé N. (dendrogram of Fig. 4)	60	61		58	59		26	29	27	28	
Plot size (m^2)	30	30		20	20		20	20	10	20	
Total cover (%)	100	80		80	80		50	70	80	70	
Exposure	0	0		0	0		0	0	0	0	
Slope (º)	0	0		0	0		1	0	0	0	
Species N.	2	4		8	3		8	8	5	13	
Character species of the associations											
Suaeda vera	5	5	V	.	.	.	.	.	.	.	.
Sarcocornia perennis	2b	+	V	4	5	V	.	.	.	.	.
Aeluropus littoralis	.	+	III	2m	2m	V	3	2b	3	5	V
Character species of *Salicornietea fruticosae*											
Halimione portulacoides	.	1	III	2b	.	III	.	.	.	.	.
Character species of *Ammophiletea*											
Lotus cytisoides	.	.		.	.	.	2m	.	.	.	II
Polypogon maritimus	.	.		.	.	.	1	1	.	.	III
Medicago marina	.	.		.	.	.	.	.	.	2m	II
Character species of *Saginetea maritimae*	.	.		.	.	.	.	.	.	.	
Parapholis incurva	.	.		2m	.	III	.	.	4	2b	III
Spergularia salina	.	.		.	.	.	.	.	2a	.	II
Hordeum marinum	.	.		.	.	.	.	.	2m	.	II
Plantago weldenii	.	.		.	.	.	.	.	2b	.	II
Character species of *Thero-Brachypodietea*											
Phleum exaratum subsp. aegeum	.	.		2a	.	III	.	.	.	.	.
Bupleurum semicompositum	.	.		1	.	III	.	.	.	.	.
Matthiola tricuspidata	.	.		.	.	.	+			2a	III
Hedypnois rhagadioloides	.	.		.	.	.	.	2b	.	.	II
Plantago lagopus	.	.		.	.	.	.	+	.	.	II
Lagurus ovatus	.	.		.	.	.	.	2m	.	.	II
Other species											
Limonium sp.	.	.		2a	.	III	+	+	+	.	IV
Triglochin barrelieri	.	.		+	.	III	.	.	.	+	II
Juncus heldreichianus	.	.		.	+	III	.	.	.	.	
Cynodon dactylon	.	.		.	.	.	2a	2m	.	.	III
Reichardia picroides	.	.		.	.	.	+	1	.	.	III
Limonium sinuatum	.	.		.	.	.	1	3	.	.	III
Silene sartorii	.	.		.	.	.	.	2m	+		III
Helichrysum stoechas subsp. barrelieri	.	.		.	.	.	.	1	.	.	II
Echium angustifolium	.	.		.	.	.	.	+	.	.	II
Sarcocornia perennis	.	.		.	.	.	.	.	r	.	II
Sonchus oleraceus	.	.		.	.	.	.	.	.	+	II
Cressa cretica	.	.		.	.	.	.	.	.	1	II

Tab. 13 - *Juncus heldreichianus* comm. (rels. 1-7).

Relevé N.	1	2	3	4	5	6	7	
Relevé N. (dendrogram of Fig. 4)	51	52	53	54	55	56	57	
Plot size (m^2)	30	30	30	30	30	30	30	
Total cover (%)	100	100	100	80	70	70	100	
Exposure	0	0	0	S	0	0	0	
Slope (º)	0	0	0	0	0	0	0	
Species N.	3	4	4	5	18	8	5	
Character species of the association								
Juncus heldreichianus	4	5	5	5	4	4	5	V
Character species of *Juncetea maritimi*								
Carex extensa	.	.	2b	2b	.	.	.	II
Character species of *Saginetea maritimae*								
Parapholis incurva	.	1	.	2m	.	.	.	II
Polypogon monspeliensis	1	.	+	.	.	.	.	II
Spergularia salina	.	+	.	1	.	.	.	II
Plantago weldenii	.	.	.	.	1	.	r	II
Character species of *Thero-Brachypodietea*								
Hedypnois rhagadioloides	.	.	.	.	2b	.	.	I
Medicago littoralis	.	.	.	.	1	.	.	I
Lagurus ovatus	.	.	.	.	1	.	.	I
Matthiola tricuspidata	.	.	.	.	.	2m	.	I
Other species								
Phragmites australis	2b	1	+	.	.	.	.	III
Limonium sp.	.	.	.	.	1	2a	.	II
Aegilops biuncialis	.	.	.	.	2a	.	.	I
Halimione portulacoides	.	.	.	.	1	.	.	I
Suaeda vera	.	.	.	.	2m	.	.	I
Anagallis arvensis	.	.	.	.	2m	.	.	I
Picris pauciflora	.	.	.	.	+	.	.	I
Medicago disciformis	.	.	.	.	+	.	.	I
Bromus madritensis	.	.	.	.	+	.	.	I
Aeluropus littoralis	.	.	.	.	.	2b	.	I
N. of accidental species	0	0	0	1	5	4	3	

Tab. 14 - *Schoenoplectus littoralis* comm. (rel. 1), *Phragmites australis* comm. (rels. 2-3), *Ruppietum maritimae* Hocquette 1927 (rel. 4), *Potamogetonetum pectinati* Carstensen (rel. 5), *Callitriche brutia* comm. (rels. 6-7).

Relevé N.	1	2	3	4	5	6	7
Relevé N. (dendrogram of Fig. 4)	44	45	46	47	48	49	50
Plot size (m^2)	30	30	30	25	30	5	5
Total cover (%)	100	100	100	100	100	70	80
Exposure	0	0	0	0	0	0	0
Slope (º)	0	0	0	0	0	0	0
Species N.	2	2	3	1	1	2	7
Character species of the associations							
Schoenoplectus littoralis	5	.	.	.	.	.	.
Phragmites australis	.	5	5	.	.	.	.
Ruppia maritima	.	2b	.	5	.	.	.
Stuckenia pectinata	.	.	.	.	5	.	.
Callitriche brutia	.	.	.	.	.	4	4
Other species	.	.	.	.	.	.	.
Juncus heldreichianus	2b	.	2b	.	.	.	.
Carex extensa	.	.	+	.	.	.	.
Plantago weldenii	.	.	.	.	.		1
Lythrum hyssopifolia	.	.	.	.	.	r	1
Poa infirma	.	.	.	.	.	.	1
Spergularia bocconei	.	.	.	.	.	.	1
Rumex sp.	.	.	.	.	.	.	1
Juncus bufonius	.	.	.	.	.	.	1

Fig. 17 - Sites of the relevés of the habitat types Estuaries (1130) and Coastal lagoons (1150).

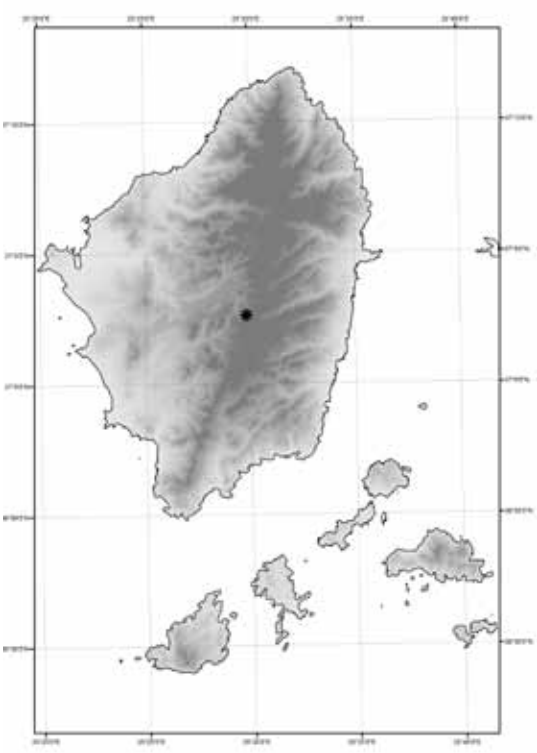

Fig. 18 - Sites of the relevés of the habitat type Mediterranean temporary ponds (3170).

the *Ranunculo-Callitrichetum brutiae* (Brullo & Minissale, 1998) are used to be referred to the *Preslion cervinae* alliance, order *Isoetalia*. Nevertheless in the syntaxonomical scheme proposed by Rivas-Martínez *et al*. (2001) *C. brutia* is treated as diagnostic of many communities classified within the alliance *Ranunculion aquatilis* (order *Potametalia*, class *Potametea*). It should also be noted that Sarika *et al*. (2003) reported a vegetation type with *Ranunculus rionii* and *C. brutia* from Epirus considering that it belongs to *Ranunculion aquatilis* as well. Moreover Mucina (1997) cited *C. brutia* within the class *Isoëto-littoreletea* which corresponds to the habitat code 3130. We think that the floristic composition of *C. brutia* stands found in the investigated area permits their assignment to the class *Isoeto-Nano-Juncetea* and possibly to the alliance *Preslion cervinae*.

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Syntaxonomic scheme

Aeluropus littoralis community

ASPLENIETEA TRICHOMANIS (Br.-Bl. in Meier et Br.-Bl. 1934) Oberd. 1977
CIRSIETALIA CHAMAEPEUCES Horvat in Horvat *et al*. 1974
Staehelina fruticosa community
Scrophularia heterophylla community

ISOETO-NANO-JUNCETEA Br.-Bl. & Tüxen ex Westhoff, Dijk & Passchier 1946
ISOETALIA Br.-Bl. 1936

Preslion cervinae Br.-Bl. ex Moor 1937
Callitriche brutia community

QUERCETEA ILICIS Br.-Bl. ex A. et O. Bolòs 1950
QUERCETALIA ILICIS Br-Bl. ex Molinier 1934 em. Rivas-Martínez 1975
Quercion ilicis Br-Bl. ex Molinier 1934 em. Rivas-Martínez 1975
Rhamno lycioidis-Quercetum cocciferae Br.-Bl. et Bolòs 1954
PISTACIO LENTISCI-RHAMNETALIA ALATERNI Rivas-Martínez 1975
Oleo-Ceratonion silique Br.-Bl. Guinochet & Drouineau 1944 em. Rivas-Martínez 1975
Pistacio lentisci-Juniperetum phoeniceae Trinajtić 1987
Juniperion turbinatae Rivas-Martínez 1975 corr. 1987
Pistacio lentisci-Juniperetum macrocarpae Caneva, De Marco et Mossa 1981

CISTO-MICROMERIETEA JULIANAE Oberd. 1954
POTERIETALIA SPINOSI Eig 1939
Helichryso barrelieri-Phagnalion graeci (Barbero & Quèzel 1989) R. Jahn in Mucina *et al*. 2009
Erica manipuliflora-Thymbra capitata community
Thymbra capitata community
Genista acanthoclada-Sarcopoterium spinosum community
Sarcopoterium spinosum community
Cistus salvifolius-Cistus parviflorus community

NERIO-TAMARICETEA Br.-Bl. & O. Bolòs 1958
TAMARICETALIA AFRICANAE Br.-Bl. & O. Bolòs 1958; em. Izco, Fernández & Molina 1984
Rubo ulmifolii-Nerion oleandri O. Bolòs 1985
Nerium oleander-Vitex agnus-castus community

CRITHMO-STATICETEA Br.-Bl. in Br.-Bl., Roussine & Nègre 1952
CRITHMO-STATICETALIA Molinier 1934
Crithmo-Staticion Molinier 1934
Limonio-Cichorietum spinosi (Knapp 1965) Géhu *et al*. 1987
Crithmo-Frankenion hirsutae Mayer 1995
Frankenia hirsuta-Limonium graecum community

STELLARIETEA MEDIAE R.Tx., Lohmeyer & Preising ex von Rochow 1951
GERANIO PURPUREI-CARDAMINETALIA HIRSUTAE Brullo in Brullo & Marcenò 1985
Theligono cynocrambis-Parietarietum lusitanicae ass. nova
Holotypus: Table 2, rel. 5, *hoc loco*
Character species: *Theligonum cynocrambe*, *Parietaria lusitanica*, *Mercurialis annua*, *Valantia muralis*.
Physiognomy and ecology: Sciaphilo-subnitrophilous vegetation dominated by *Parietaria lusitanica*, growing on shaded coastal limestone slopes and cliffs.
Distribution: Keros island (Greece)
CHENOPODIETALIA MURALIS Br.-Bl. in Br.-Bl., Gajewski, Wraber & Walas 1936
Mesembryanthenion crystallini Rivas-Martı´nez, Wildpret, Del Arco, Rodrıguez, Pérez de Paz, García-Gallo, Acebes, T.E. Díaz & Fernández-González 1993
Mesembryanthemum nodiflorum community

CAKILETEA MARITIMAE Tx. et Preising ex Br.-Bl. et Tx. 1952
EUPHORBIETALIA PEPLIS Tx. ex. Oberd. 1949
Euphorbion peplis Tx. ex. Oberd. 1952
Cakile maritima community

EUPHORBIO PARALIAE-AMMOPHILETEA AUSTRALIS Géhu & Rivas-Martínez in Rivas-Martínez *et al*. 2011
AMMOPHILETALIA AUSTRALIS Br.-Bl. 1933
Agropyrion juncei (R. Tüxen 1945 in Br.-Bl. & R. Tüxen 1952) Géhu, Rivas-Martínez & R. Tüxen 1972 in Géhu, Costa, Scoppola, Biondi, Marchiori, Peris, Franck, Caniglia & Veri 1984

Cypero mucronati-Agropyretum juncei (Kuhnhaltz-Lordat 1923) Br.-Bl. 1933
Ammophilion australis Br.-Bl. 1921 corr. Rivas-Martínez, Costa & Izco in Rivas-Martínez, Lousa, Díaz, Fernández-González & Costa 1990
Medicagini marinae-Ammophiletum australis Br.-Bl. 1921 corr. Fernández Prieto & T.E. Diaz 1991
Medicago marina-Ononis variegata community

THERO-BRACHIPODIETEA Br.-Bl. ex A. de Bolos y Vayreda 1950
CUTANDIETALIA MARITIMAE Rivas-Martinez, Díez-Garretas & Asensi in Rivas-Martinez *et al*. 2002
Matthiola tricuspidata-Pseudorlaya pumila community

SARCOCORNIETEA FRUTICOSAE Br.-Bl. et R. Tx. ex A. et O. de Bolòs 1950 *nom. mut. propos*. Rivas-Martínez *et al*. 2002
SARCOCORNIETALIA FRUTICOSAE Br.-Bl. 1933 *nom. mut. propos*. Rivas-Martínez *et al*. 2002
Arthrocnemion perennis Rivas-Martínez in Rivas-Martínez & Costa 1984
Sarcocornia perennis-Halimione portulacoides community
Suaedion verae (Rivas-Martínez, Lousã, T.E. Díaz, Fernández-González & J.C. Costa 1990) Rivas-Martínez, Fernández-González & Loidi 1999.
Suaedetum verae Br.-Bl. ex O. de Bolòs & Molinier 1958

JUNCETEA MARITIMI R. Tx. et Oberd. 1958
JUNCETALIA MARITIMI Br.-Bl. ex Horvatić 1934
Juncion maritimi Br.-Bl. ex Horvatić 1934
Juncus heldreichianus community

PHRAGMITO-MAGNO-CARICETEA Klika in Klika et Novák
PHRAGMITETALIA W. Koch 1926
Phragmition communis W. Koch 1926
Phragmites australis community
BOLBOSCHOENETALIA MARITIMI Hejný in Holub *et al*. 1964
Cirsio brachycephali-Bolboschoenion (Passarge 1978) Mucina in Bal.-Tul. *et al*. 1933
Schoenoplectus litoralis community

POTAMETEA Klika in Klika & Novák 1931
POTAMETALIA Koch 1926
Potamion (Koch 1926) Libbert 1931
Potamogetonetum pectinati Carstensen
RUPPIETEA J. Tüxen 1960
RUPPIETALIA MARITIMAE J. Tüxen 1960
Ruppion maritimae Br.-Bl. ex Westhoff in Bennema, Sissingh & Westhoff 1943
Ruppietum maritimae Hocquette 1927

Others syntaxa quoted in the text

Asterion cretici Zaffran 1990; *Capparo-Amaricion tournefortii* Horvat in Horvat *et al*. 1974; *Cardopatio-Juncetum heldreichianii* Yurdakulol *et al*. 1996, ass. nova; *Ceratonio-Pistacietum lentisci* Zohary 1962 *juniperetosum phoeniceae*; *Ceratonio-Rhamnion oleoidis* Barbero & Quézel 1979; *Cirsio chamaepeuces-Scrophularietum heterophyllae* Horvat in Horvat *et al*. 1974; *Cisto-Ericetalia* Horvatic 1958; *Coccifero-Caprinetum* Oberdorfer 1948; *Coridothymion capitati* Eig 1939; *Crithmo-Malcolmion* Lovrić et Uslu 1990; *Dorygnio-Coridothymion capitati* (Oberd. 1954) Brullo *et al*. 1997; *Festuco-Puccinellietea* Soó 1968; *Halimiono portulacoidis-Suaedetum verae* (Br.-Bl. 1952) Molinier et Tallon 1970; *Inulion heterolepidis* Horvat in Horvat *et al*. 1974; *Isoëto-Littoreletea* Br.-Bl. et Vlieger in Vlieger 1937; *Isoeto tigulianae-Callitrichetum brutiae* Bagella *et al*. 2009, ass. nova; *Micromerion julianae* Oberd. 1954; *Molinio-Holoschoenion vulgaris* Br.-Bl. ex Tchou 1948; *Nanocyperetalia* Klika 1935; *Oleo-lentiscetum aegaeicum* Krause, Ludwig et Seidel 1963 *juniperetosum phoeniceae*; *Oleo-lentiscetum aegaeicum* Krause, Ludwig et Seidel 1963 *quercetosum cocciferae*; *Periploco-Viticetum agni-casti* Lakušić 1980; *Phragmitetum communis* Schmale 1939; *Pistacio-Juniperetum macrocarpae* Bartolo, Brullo & Marcenò 1982; *Populetalia albae* Br.-Bl. ex Tchou 1948; *Querco cocciferae-Phillyreetum latifoliae* Barbero & Quézel 1976; *Querco cocciferae-Pistacietum lentisci* Br.-Bl. *et al*. 1935 em. A.

& O. Bolòs 1950; *Ranunculion aquatilis* Passarge 1964; *Ranunculo-Callitrichetum brutiae* Brullo & Minissale 1998, ass. nova; *Rubio tenuifoliae-Juniperetum macrocarpae* Géhu *et al*. 1989; *Saginetea maritimae* Weshoff *et al*. 1962; *Salicetalia purpureae* Moor 1958; *Sarcopoterietalia spinosi* Eig 1939; *Sarcopoterio spinosi-Coridothymetum capitati* Lavr. 1975; *Schoenoplectetosum litoralis* O. Bolòs 1967; *Scirpetum compacto-litoralis* (Br.-Bl. in Br.-Bl., Roussine & Nègre 1952) O. Bolòs 1962 *corr*. Rivas-Martínez, Costa, Castraviejo & E. Valdés 1980; *Suaedetum fruticosae* Br.-Bl. ex O. Bolòs & Molinier 1958; *Tamaricion africanae* Br.-Bl. & O. Bolòs 1958; *Tamaricion boveano-canariensis* Izco *et al*. 1984; *Vitici-Tamaricetum* Horvatić 1963.

References

Acosta A., Blasi C. & Stanisci A., 2000. Spatial connectivity and boundary patterns in coastal dune vegetation in Circeo National Park, Central Italy. Journal of Vegetation Science 11: 149-154.

Acosta A., Ercole S., Stanisci A., Valerio De Patta Pillar & Blasi C., 2007. Coastal vegetation zonation and dune morphology in Some Mediterranean ecosystems. Journal of Coastal Research 23 (6): 1518-1524.

Acosta A.T.R., Stanisci A., Ercole S. & Blasi C., 2003. Sandy coastal landscape of the Lazio region (Central Italy). Phytocoenologia 33 (4): 715-726.

Adriani M.J. & Terwindt J.H.J., 1974. Sand stabilization and dune building up. Comm. 19, Rijkswaterstaat, The Hague, NL.

Altinözlü H., 2004. Flora of the Natural Conservation Area in Adana-Yumurtalik Lagoon (Turkey). Turk. J. Bot. 28: 491-506.

Aplada, E. 2003. Vegetation zones and ecological evaluation of the core of the national park of Parnitha. MSc Thesis, University of Patras, Patras, Greece (in Greek with English summary).

Arianoutsou M. & Margaris N.S., 1981. Producers and the fire cycle in a phryganic ecosystem – Pp. 181-190. In: Margaris N.S. & Mooney H.A. (Ed.), Components of productivity of Mediterranean climate regions. Basic and applied aspects. The Hague.

Arianoutsou M., Delipetrou P., Dimopoulos P., Kostantinidis P., Economidou E., Tsiourlis G., 1997. Habitat types in Greece. In: Dafis S., *et al*., (Eds.). The Greek "Habitat" project Natura 2000: An overview. Pp. 402–434.

Asensi A., Diez-Garretas B., 2011. The *Tamaricetalia* order in the Western Mediterranean region. Plant Biosystems 145: 123-131.

Asensi A., Diez-Garretas B. & Quézel P., 2007. Plant communities of *Juniperus turbinata* Guss. subsp. *turbinata* in the Mediterranean Region. A biogeographical, bioclimatical and syntaxonomical survey. Phytocoenologia 37 (3-4): 599-623.

Attore F., De Sanctis M., Francesconi F., Iberite M. & Bruno F., 2004. Multifunctional and multimedia GIS system for the inventory and the management of the wetlands of Puglia Region (Southern Italy). Annali Di Botanica (nuova serie) 4: 37-47.

Babalonas D., 1979. Phytosociological study of the vegetation of Evros Delta. Ph. D. Thesis, Aristotle University of Thessaloniki, Greece.

Bagella S., Caria C., Farris E. Filiheddu R., 2009. Phytosociological analysis in Sardinian Mediterranean temporary wet habitats. Fitosociologia 46 (1): 11-26.

Bagnouls F., Gaussen H., 1953. Saison seche et indice xérothermique. Bull. Soc. Hist. Nat. de Toulouse 88: 193-290.

Barbero M. & Quézel P., 1976. Les groupements forestiers de Grèce Centro-Méridionale. Ecol. Medit. 2: 3-86.

Barbero M., Bonin G., Loisel R. & Quézel P., 1990. Changes and disturbances of forest ecosystems caused by human activities in the western part of the Mediterranean basin. Vegetatio 87: 151-173.

Barkman J.J., Doing H. & Segal S., 1964. Kritische Bemerkungen und Vorschl.ge zur quantitativen Vegetationsanalyse. Acta Bot Neerl 13: 394-419.

Baruch U., 1986. The late Holocene vegetational history of Lake Kinneret (Sea of Galilee), Israel. Paléorient 12: 37-48.

Baruch U., 1990. Palynological evidence of human impact on the vegetation as recorded in Late Holocene lake sediments in Israel. In: Bottema S., Entjes-Nieborg G., van Zeist W., (Eds.). Man's role in the shaping of the eastern Mediterranean landscape. A.A. Balkema, Rotterdam, The Netherlands, Pp. 283–293.

Bergmeier E., Blockeel T., Böhling N., Fournaraki C., Gotsiou P., Jahn R., Lansdown R. & Turland N., 2011. An inventory of the vascular plants and bryophytes of Gavdopoula island (S Aegean, Greece) and its phytogeographical significance — Willdenowia 41: 179 –190.

Bergmeir E., Dimopoulos P. & Mucina L., 2011. Validations of some alliances of the Aegean chasmophytic vegetation of the *Asplenietea trichomanis*. Lazaroa 32: 183-186.

Biel B., 2005. Contribution to the flora of the Aegean Islands of Santorini and Anafi (Kiklades, Greece). Willdenowia 35: 87-96.

Biondi E., 1989. The vegetation of sedimentary low coasts in Corfu island. Végétation et qualité de l'environment côtier en méditerranée. Coll. Phytosociol. 19: 401-425.

Biondi E., 2007. Thoughts on the ecology and syntaxonomy of some vegetation typologies of the Mediterranean coast. Fitosociologia 44 (1): 3-10.

Biondi E. & Galdenzi D., 2014. Syntaxonomic considerations of the Mediterranean vegetation dominated by perennial psammophilous graminaceous plants. Plant Sociology 51 (1): 25-32.

Biondi E., Blasi C., Allegreza M., Anzelloti I., Azzella M.M., Carli E., Casavecchia S., Copiz R., Del Vico E., Facioni L., Galdenzi D., Gasparri R., Lasen C., Pesaresi S., Poldini L., Sburlino G., Taffetani F., Vagge I., Sitti S. & Zivkovic L., 2014. Plant communities of Italy: The vegetation prodrome. Plant Biosystems 148 (4): 728-814.

Biondi E., Ballelli S., Taffetani F. & Francalancia C., 1994. La vegetazione delle "fiumare" del versante ionico lucano-calabrese. Fitosociologia 27: 51-66.

Böhling N., 1995. Zeigerwerte der Phanerogamen-Flora von Naxos (Griechenland). Ein Beitrag zur ökologischen Kennzeichnung der mediterranen Pflanzenwelt. Stuttgarter Beitr. Naturk. A 533: 1-75.

Böhling N., 1997. Ergänzungen und Anmerkungen zur Flora der Insel Naxos (Kykladen, Griechenland): Zur botanischen Besonderheit und pflanzengeographischen Bedeutung des Engares-Tales. Stuttgarter Beitr. Naturk. A 560: 1-25.

Böhling N., Greuter W. & Raus Th., 2002. Zeigerwerte der Gefässpflanzen der Südägäis. Braun-Blanquetia 32: 1-109.

Böhling, N. 1994. Studien zur landschaftsökologischen Raumgliederung auf der mediterranen Insel Naxos (Griechenland) unter besonderer Berücksichtigung von Zeigerpflanzen. Diss. Bot. 230 (i-vii): 1-247 + 8 maps and charts.

Bolòs O. de., 1985. Aproposit des les communitats de Nerium oleander. Collect. Bot. (Barcelona) 16: 227-228.

Bolòs O. de, Masalles R.M., Ninot J.M. & Vigo J., 1996. A survey on the vegetation of Cephalonia (Ionian islands). Phytocoenologia 26: 81-123.

Braun-Blanquet J., Roussine N. & Négre R., 1952. Les groupements végétaux de la France Méditerranéenne. Centre Nat. Rech. Scient. 297 pp.

Brofas G., Karetsos G., Panitsa M. & Theocharopoulos M., 2001. The flora and vegetation of Gyali island, SE Aegean, Greece. Willdenowia 31: 51-70.

Browicz K., 1997. Woody flora of Milos and Kimolos (Kiklades, Greece). Arbor. Kornickie 42: 45-63.

Brullo S. & Marcenò C., 1985. Contributo alla conoscenza della vegetazione nitrofila della Sicilia. Coll. Phytosociol. 12: 23-148.

Brullo S. & Minissale P., 1998. Considerazioni sintassonomiche sulla classe *Isoeto-Nanojuncetea*. Intinera Geobotanica 11: 263-290.

Brullo S., Cormaci A., Guarino R. & Musarella C.M., 2007. Syntaxonomical survey of *Geranio-Cardaminetalia hirsutae*: semi-natural therophytic vegetation of the Mediterranean region. Annali di Botanica 7: 183-216.

Brullo S., Giusso Del Galdo G.P., Siracusa G. & Spampinato G., 2001. Considerazioni fitogeografiche sulla vegetazione psammofila dei litorali Italiani. Biogeographia 22: 93-137.

Brullo S., Guarino R., Minissale P., Scelsi F. & Spampinato G., 2004. Indagine fitosociologica sulla vegetazione forestale dell' Egeo meriodionale. Colloq. Phytosoc. 28: 401-466.

Brullo S., Minisale P. & Spampinato G., 1997. La classe *Cisto-Micromerietea* nel Mediterraneo centrale e orientale. Fitosociologia 32: 29-60.

Büdel J., 1965. Die Relieftypen der Fläcfienspülzone Süd-Indiens am Ostabfall Dekans gegen Madras. Colloquium Geographicum, II, 100 p., Bonn.

Büdel J., 1977. Klima-Geomorphologie. Borntraeger, Berlin-Stuttgart.

Cazzin M., Ghirelli L., Mion D. & Scarton F., 2009. Completamento della cartografia della vegetazione e degli habitat della Laguna di Venezia: Anni 2005-2007. Lavori - Soc. Ven. Sc. Nat. 34: 81-89.

Christia C., Tziortzis I., Fyttis G., Kashta L. & Papastergiadou E., 2011. A survey of benthic aquatic flora in transitional water systems of Greece and Cyprus (Mediterranean Sea). Botanica Marina 54: 169-178.

Costa J.C., Lousã M. & Espírito-Santo M.D., 1996. The vegetation of "Pargue Natural da Ria Formosa" Algarve, Portugal. Stud. Bot. 15: 69-157.

Dafis S., Papastergiadou E. & Lazaridou E., 1999. Technical manual of mapping of Greek habitat types (Appendix). Greek Biotope-Wetland Centre (EKBY), Thessaloniki. 180 pp. + Supplement, 90 pp.

Dafis S., Papastergiadou E., Georghiou K. Babalonas D., Georgiadis Th., Papageorgiou M., Lazaridou T. & Tsiaoussi V. (Eds.), 1996. Directive 92/43/EEC. The Greek Habitat Project Natura 2000: An overview. Ivxx + 893 pp., Thessaloniki.

Dafis S., Papastergiadou E., Lazaridou E. & Tsiafouli M., 2001. Technical manual of mapping of Greek habitat types. Greek Biotope-Wetland Centre (EKBY), Thessaloniki. 393 pp.

Davis P. H. (ed.), 1965-85. Flora of Turkey and the East Aegean islands 1-9. Edinburgh, etc.

De Lillis M., 1998. Restoration and management of European sand dunes. J. Int. Ass. Environ. Design 2: 31-40.

Dean R.G. & Dalrymple R.A., 2002. Coastal processes. Cambridge University Press, Cambridge, UK.

Debazac E.F. & Mavrommatis G., 1971. E megale ikologike dieresis tis dasikis vlastiseos is tin Ellada. I.D.E.A. 48: 1-35.

Deil U. & Hammoumi M., 1997. Contribution á l' étude des groupements rupicoles des Bokkoya (Littoral

Du Rif Central, Maroc). Acta Botanica Malaciteana 22 :131-146.

Delforge P., Joukoff C. & Joukoff A., 1998. *Ophrys icariensis* Hirth et Spaeth dans l'île de Naxos (Cyclades, Grèce). Naturalistes Belges 79 (3): 107-113.

Delipetrou P., Economidou E. & Tsiourlis G., 1996. Biodiversity of the Aegean islands as it is expressed in the habitats and flora species protected by the directive 92/43/EEC in the sites proposed for the "Natura 2000" network). Proceedings of the 6th Botanical Scientific Conference, 6 - 11. 4. 1996. Pp. 74–78. Paralimni, Cyprus. (In Greek with English summary:

Devillers P., Devillers-Tershuren J. & Ledant J.P., 1991. Corine Biotopes Manual. Habitats of the European Community. Commission of the European communities. Luxenburg.

Diapoulis C., 1961. Endemic plants of the Cyclades islands. Epetirida tis Etairias Kykladikon Meleton A: 1-16.

Dieren J. W. Van, 1934. Organogene Dünenbildung, eine geomorphologische Analyse der westfriesischen Insel Terschelling mit pflanzensoziologischen Methoden. Thesis, University Amsterdam.

Díez-Garretas B. & Asensi A., 2014. The coastal plant communities of J*uniperus macrocarpa* in the Mediterranean region. Plant Biosystems 148(3): 429-438.

Díez-Garretas B., Asensi A. & Gavilán R., 2003. Sabulicolous therophytic communities in the Mediterranean Region: a proposal of phytosociological synthesis. Phytocoenologia 33: 495-526.

Díez-Garretas B.., Hernández A.M. & Asensi A., 1975. Estructura de algunas comunidades vegetales de dunas en el litoral de Marbella (Málaga). Acta Botanica Malacitana 1: 69-80.

Dimopoulos P., Bergmeier E. & Fischer P., 2006. Natura 2000 Habitat Types of Greece evaluated in the light of distribution, threat and responsibility. Biology and Environment: Proceedings of the Royal Irish Academy 106B (3): 175-187.

Dimopoulos P., Bergmeier E., Mucina L., Fotiadis G., Panitsa M., Raus Th., Sýkora K.V., Theodoropoulos K. & Tsiripidis I., 2011. Syntaxonomic overview of the vegetation of Greece: checklist of high-rank syntaxa, distribution patterns and nature conservation. 14th EVS Workshop, Rome.

Dimopoulos P., Papastergiadou E., Sýkora K., Georgiadis T., Babalonas D. & Dafis S., 1995. Collection and analysis of phytosociological data on the vegetation of Greece. Goulandris Natural History Museum and Greek Biotope-Wetland Centre (EKBY), Thessaloniki. 94 pp.

Dimopoulos P., Raus Th., Bergmeir E., Constantinidis Th., Kokkini S., Strid A. & Tzanoudakis D., 2013. Vascular plants of Greece: An annotated checklist. Berlin: Botanischer Garten und Botanisches Museum Berlin-Dahlem; Athens: Hellenic Botanical Society. [Englera 31].

Dimopoulos P., Sýkora K., Gilissen C., Wiecherink D. & Georgiadis T., 2005. Vegetation ecology of Kalodiki Fen (NW Greece). Biologia (Bratislava) 60: 69-82.

Dimopoulos P., Sýkora K., Mucina L. & Georgiadis T., 1997. The high-rank syntaxa of the rock-cliff and scree of the mainland Greece and Crete. Folia Geobot. Phytotax. 32: 313-334.

Di Pietro R., Dibitono P., Garziano G., Sciandrello S., Wagensommer R.P., Medagli P. & Tomaselli V., 2009. Preliminary results of floristic and vegetation surveys in three coastal humid areas in the Puglia region (southern Italy). Lazaroa 30: 99-107.

Doing H., 1985. Coastal fore dune zonation and succession in various parts of the world. Plant Ecology 61: 65-75.

Dubyna D.V. & Neuhäuslová Z., 2000. Salt meadows (Festuco-Puccinellietea) of the Birjučij Island Spit in the Azov Sea, Ukraine. Preslia 72: 31-48.

Economidou E., 1976. La répartition des phrygana en Grèce et ses rapports avec le climat et l' influence anthropogène. Doc. Phytosoc. 15-18: 45-56.

Ellenberg H., 1956. Aufgaben und Methoden der Vegetationskunde. Ulmer, Stuttgart, 136 pp.

Ellenberg H. & Mueller-Dombois D., 1967. A key to Raunkiaer plant life forms with revised subdivisions. Berichte des geobotanischen Institutes der ETH, Stiftung Rübel 37: 56-73.

Emberger L., 1955. Une classification biogéographique des climates. Recueil Trav. Lab. Bot. Géol. zool. Univ. Fac. Sci. Montpellier 7: 3-43.

Emberger L., 1959. Orientation actuelle au service de la C.G.V. de la cartographie physiologique appliquée. Bull. Serv. Carte hytogéogr., sér. B 4: 119-146.

European Commission, 2007. Interpretation Manual of European Union Habitats. Eur 27. 142 pp. European Commission, DG Environment.

European Commission, 2013. Interpretation manual of European Union habitats. EUR 28. 144 pp. European Commission, DG Environment.

European Parliament and the Council of the European Union, 2009. Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds.

Evelpidou N., Pavlopoulos K., Vassilopoulos A., Triantaphyllou M, Vouvalidis K. & Sydides G., 2012. Paleogeographical reconstruction of the western part of Naxos island (Greece). Quaternary International 266: 81-93.

Făgăras M., Bercu R. & Ghiduş D., 2003. Observations concerning ecological and floristical characteristics of *Juncetum maritimi* (Rubel 1930) Pign. 1953 association from the Romanian sea shore area. Contribuţii Botanice 38: 47-55.

Fanelli G., De Sanctis M., Cjeta E., Mullaj A. & Attore F., 2015. The vegetation of the Buna River protected landscape (Albania). Hacquetia 15 (1): 1-46.

Feola S., Carranza M.L., Schaminée J.H.J., Janssen J.A.M. & Acosta A.T.R., 2011. EU habitats of interest: an insight into Atlantic and Mediterranean beach and foredunes. Biodiversity and Conservation 20: 1457-1468.

Filigheddu R., Farris E. & Biondi E., 2000. The vegetation of S'Ena Arrubia lagoon (central-west Sardinia). Fitosociologia 37: 39–59.

Frondoni R. & Iberite M., 2002. The halophile vegetation of the sedimentary coast of Lazio (central Tyrrhenian district, Italy). Plant Biosystems 136 (1): 49–68.

García L.V., Maranon A., Moreno A. & Clemente L., 1993. Above-ground biomass and species richness in a Mediterranean saltmarsh. J. Veg. Sci. 4: 417-424.

Géhu J.M. & Biondi E., 1994. Antropizzazione delle dune del Mediterraneo. In: Ferrari C., Manes F. & Biondi E. (Eds.). Alterazioni ambientali ed effetti sulle piante. Bologna: Edagricole, Pp. 160–176.

Géhu J.M. & Uslu T., 1989. Données sur la végétation littorale de la Turquie du Nord-Ouest. Phytocoenologia 17: 449– 505.

Géhu J.-M., 1985. European dune and shoreline vegetation. Nature and environment no. 32. Council of Europe, Strasbourg, FR.

Géhu J.M., Apostolides N., Géhu-Franck J. & Arnold K., 1989. Premier données sur la végétation littorale des îles de Rodhos et de Karpathos (Grèce). Colloq. Phytosoc. 19: 545-582.

Géhu J.M., Costa M. & Biondi E., 1990a. Les Juniperetа macrocarpae sur sable. Acta Bot. Malacitana 15: 303-309.

Géhu J.-M., Costa M. & Uslu T., 1990b. Analyse phytosociologique de la végétation littorale des côtes de la partie Turque de l'île de Chypre dans un souci conservatoire. Doc. Phytosoc N. S. 8: 203-234.

Géhu J.-M., Costa M., Biondi E., Géhu-Franck J. & Arnold N., 1987. Données sur la végétation littorale de la Crète (Grèce). Ecol. Médit. 13 (1/2): 93-105.

Géhu J.-M., Costa M., Biondi E., Peris J. B. & Arnold N., 1984. Données sur la végétation littorale de la végétation maritime des côtes méridionales de l'Gle de Chypre (plages, dunes et falaises). Doc. Phytosoc. N.S. 8: 343-364. Nature conservation, 14th EVS Workshop, Rome 2011.

Géhu J.M., Roman N. & Boullet V., 1994. Observations nouvelles sur la végétation des côtes de Roumanie au sud du Delta du Danube. Fitosociologia 27: 73-89.

Georgiadis Th., Dimopoulos P. & Dimitrelos G., 1997. The flora and vegetation of the Acheron Delta (W Greece) aiming at nature conservation — Phyton (Horn, Austria) 37: 31-60.

Georgiadis Th., Economidou E. & Christodoulakis D., 1990. Flora and vegetation of the Strofilia Coastal Area (NW Peloponnesos - Greece). Phyton 30 (1): 15-36.

Giusso Del Galdo G.P., Marecono C., Musarella C.M. & Sciandrello S., 2008. La vegetatione costier della R.N.O. "Tore Salsa" (Siculiana - AG). Informatore Botanico Italiano 40 (1): 73-89.

Grabherr G. & Mucina L., 1993. Die Pflanzengesellschaften Österreichs. Teil. II. Natürliche Vegetation. Gustav Fischer Verlag, Jena etc.

Gradstein S.R. & Smittenberg J.H., 1977. The hydrophilous vegetation of Western Crete. Vegetatio 34: 65-86.

Gratani L., 1987. A critical approach to the problem of the vigour of *Ammophila littoralis* (Beauv.) Rothm. Ecologia Mediterranea 13 (1-3): 53-60.

Greuter W., Phitos D. & Runemark H., 1976. Greece and the Greek islands. A report on the available floristic information and on current floristic and phytotaxonomic research. Colloquium International C.N.R.S. 235: 67-89.

Grillas P., 1990. Distribution of submerged macrophytesin the Camargue in relation to environmental factors. Journal of Vegetion Science 1: 393-402.

Grillas P., 2004. Introduction. In: Grillas P., Gauthier P., Yavercovski N. & Perennou C., (Eds.). Mediterranean Temporary Pools 1. Station Biologique de la Tour du Valat, Arles. Pp. 9.

Halácsy E. von, 1900-1904. Conspectus Florae Graecae 1: 1-576 (1900); 1: 577-825 (1901); 2: 612pp. (1902); 3: 519pp. (1904). Guilelmi Engelmann, Lipsiae.

Halácsy E. von, 1908. Supplementum Conspectus Florae Graecae. Guilelmi Engelmann, Lipsiae. 132 pp.

Halácsy E. von, 1912. Supplementum secundum Conspectus Florae Graecae. Mayar Bot. Lapok 11: 114-202.

Hejl E., Rield H., Soulakelis N., van den Haute P. & Weingartner H., 2003. Young Neogene tectonics and rielef development on the Aegean Islands of Naxos, Paros and Ios (Cyclades, Greece). Mitt. Osterr. Geol. Ges. 93: 105-127.

Horvat I., Glavač V. & Ellenberg H., 1974. Vegetation Südosteuropas. G. Fischer, Stuttgart. 768 pp.

Horvatić S., 1963. Vegetacjska karta otoka Paga s općim pregledom vegetacjskih jedinica hrvat-skog primorja. Prirodoslova istražvanja 33: 1-187.

Iliadou E., Kallimanis A.S, Dimopoulos P. & Panitsa M., 2014. Comparing the two Greek archipelagos plant species diversity and endemism patterns highlight the importance of isolation and precipitation as biodiversity drivers. Journal of Biological Research 21: 16.

Imeri A., Kupe L. Shehu J. & Dodona E., 2010. Bio-

monitoring of Bishtaraka Lagoon. Research Journal of Agricultural Science 42 (3): 629-635.

Imeri A., Mulla A.J., Dodona E. & Kupe L., 2010. Coastal vegetation of Lalzi bay (Albania). Botanica Serbica 34 (2): 99-105.

Izco J., Fernández F. & Mollina A., 1984. El orden *Tamaricetalia* Br.-Bl. & O. Bolos 1957 y su ampliación con los tarayales hiperhalófilos. Doc. Phytosoc. 8: 377-389.

Jasprica N. & Carić M., 2002. Vegetation of the natural park of Hutovi Blato (Neretva river delta, Bosnia and Herzegovina). Biologia Bratislava 57 (3): 505-516.

Jasprica N., Ruščic M. & Kovačić S., 2007. The *Chrysopogono grylli-Nerietum oleandri* association in Croatia as compared with other *Rubo ulmifolii-Nerion oleandri* communities (*Tamaricetalia*, *Nerio-Tamaricetea*) in the Mediterranean. Plant Biosystems 14 (1): 40-50.

Jasprica N., Ruščic M. & Kovačić S., 2008. *Tamaricion dalmaticae* Jasprica *et al*., all. nova, on the southeastern Adriatic coast. Symposium flora and vegetation of Slovenia 2008. Hladnikia 22: 50.

Kantrud H.A., 1991. Wigeongrass (*Ruppia maritima* L.): A Literature Review. Fish and Wildlife Research 10. United States Department of the Interior and Wildlife Service, Washington DC. 58 pp.

Karagianni P., 2009. Habitat types ecology of lake Mouria, N. Helia. Doctoral Thesis, Department of Biology, University of Patras, 344 pp. & Annexes (in Greek).

Karagianni P., Tiniakou A. & Georgiadis Th., 2008. A distribution model of habitat types along the rivers of W. Greece: A case-study. Fresenius Environmental Bulletin 17 (6): 713-721.

Karandinos M. (Ed.), 1992. The Red Data Book of threatened vertebrates of Greece. Hell. Zool. Soc. & Hellen. Ornith. Soc., Athens. 373 pp.

Karaömerlioglou D., 2007. Plant ecology investigation of natural ecosystems in the Göksu Delta. Ph. D. Thesis, University of Cucurova, Adana (Turkey). 292 pp.

Karavokyrou E. & Tzanoudakis D., 1991. The genus *Allium* in Greece: II. A cytogeographical study of the E Aegean species. Bot. Chron. 10: 777-784.

Kazanis D. & Arianoutsou A., 2004. Long-term post-fire vegetation dynamics in *Pinus halepensis* forests of Central Greece: A functional group approach. Plant Ecology 171: 101-121.

Kazanis D. & Arianoutsou A., 2006. Environmental responses of vegetation composition along an altitudinal-climatic gradient of Western Crete, Greece. Plant, fungal and habitat diversity investigation and conservation. Proceedings of IV BBC, Sofia.

Kent M. & Coker P., 1992. Vegetation description and analysis: a practical approach. CRC Press.

Knapp R., 1958. Einfuhrung in die Pflanzensoziologie. 1: Arbeitsmethden der Pflanzensoziologie und Eigenschaften der Pflanzengesellschaften. 2nd Edition. Volume 1. Eugen Ulmer, Stuttgart. 112 pp.

Knapp R., 1965. Die Vegetation von Kephallinia, Griechenland. Geobotanische Untersuchung eines mediterranen Gebietes und einige ihrer Anwendungs -Möglichkeiten in Wirtschaft und Landesplanung. Verlag Otto Koeltz, Königstein.

Knapp R., 1971. Einführung in die pflanzensoziologie. Eugen Ulmer Verlag Stuttgart.

Kougioumoutzis K., Tiniakou A., Georgiou O. & Georgiadis Th., 2012. Contribution to the flora of the South Aegean Volcanic Arc: Anafi Island (Kiklades, Greece). Willdenowia 42: 127-141.

Koumpli-Sovantzi L. & Yannitsaros A., 1993. A contribution to the costal flora of the Kikladhes (Greece). Willdenowia 23: 121-135.

Kovačić S., Jasprica N. & Ruščić M., 2001. Floristic characteristics of phoenician juniper macchia (Ass. *Pistacio lentisci-Juniperetum phoeniceae* Trinajstić 1987) in central and southern Dalmatia (Croatia). Nat. Croat. 10 (2): 73-81.

Krausch H.D., 1965. Vegetationskundliche Beobachtungen in Donaudelta. Limnologica 3: 271-313.

Krause W., Ludwig W. & Seidel F., 1963. Zur Kenntnis der Flora und Vegetation auf Serpentinstandorten des Balkans. 6. Vegetationsstudien in der Umgebung von Mandoudi (Euböa). Bot. Jb. 82: 337-403.

Krendl F., 1986. Die Arten der *Gallium mollugo* - Gruppe in Griechenland. Bot. Chron. 6-7: 1-170.

Kretzschmar G. & Kretzschmar H., 1996. Orchideen der Insel Naxos. Ber. Arbeitskreis. Heimische Orchid. 13 (1): 4-30.

Langagen A., 2004. Charophytes from four Cyclades Islands (Mykonos, Naxos, Paros and Antiparos) in Greece. Journal of Biological Research 1: 31-38.

Lavrentiades G., 1971. On the vegetation of sand dunes of Greek coasts. Coll. Phytosociol. 1: 91-98.

Lavrentiades G., 1975. Substratum of some vegetation types in Greece. In: Dierschke H. (Ed.). Vegetation und Substrat: 423-431. Ber. Intern. Sympos. Rinteln.

Lavrentiades G., 1976. On the vegetation of Patras Area — Veröffentl. Geobot. Inst. ETH 56: 59-71.

Lavrentiades G.J., 1963. On the vegetation of the Keramoti coasts. Estratto dal "Bollettino dell'Instituto di Botanica dell'Universita` di Catania" 3 (IV): 81-103.

Lavrentiades G.J., 1964. The ammophilous vegetation of the western Peloponnesos coasts. Vegetatio 12: 223-28.

Lavrentiades G.J., 1969. Studies on the flora and vegetation of the ormos Archangelou in Rhodos island. Vegetatio 19-20: 308-329.

Liakos L. & Moulopoulos C., 1967. Contribution to the differentiation of some Kermes oak types. Forest

Research Center of N. Greece. Bulletin No 16. Thessaloniki. (in Greek)

Litav M. & Orshan G., 1971. Biological flora of Israel. 1. *Sarcopoterium spinosum* (L.) Spach. Israel Journal of Botany 20: 48-64.

Louis H., 1967. Reliefumkehr durch Rumpfflächenbildung in Tanganyika. Geografiska Annales, Ser. A. 49: 256-267.

Lovric A.-Ž & Rac M., 1991. A comparison of the coastal vegetation of Greece, Yugoslavia, Bulgaria and Turkey. Bot. Chron. 10: 315-324.

Malea P., Kevrekidis Th. & Mogias A., 2004. Annual versus perennial growth cycle in *Ruppia maritima* L.: temporal variation in population characteristics in Mediterranean lagoons (Monolimni and Drana Lagoons. Northern Aegean Sea). Botanica Marina 47: 357-366.

Mavrommatis G., 1980. Phytogeographical, phytosociological and bioclimatological importance of the distribution area of kermes oak (*Quercus coccifera* L.) in Greece. To Dasos 90: 72-77. (in Greek).

Mayer A., 1995. Comparative study of the coastal vegetation of Sardinia (Italy) and Crete (Greece) with respect to the effects of human influence. IHW-Verlag, München.

McLachlan A. & Brown A.C., 2006. The Ecology of Sandy Shores. Academic Press, Burlington, MA, USA.

Molina J.A. & Moreno P.S., 2003. Diversity of the helophytic vegetation in Spain, Acta Botanica Gallica: Botany Letters 150 (2): 167-193.

Mossa L., Curreli F. & Fogu M. C., 2000. La vegetazione degli habitats terrestri della riserva marina protetta di Capo Carbonara (Sardegna sud-orientale). Rend. Sem. Fac. Sc. Univ. Cagliari Suppl. 70: 163-185.

Mucina L., 1997. Conspectus of Classes of European Vegetation. Folia Geobot. Phytotax. 32: 117-172.

Mucina L., Dengler J., Bergemeier E., Čarni A., Dimopoulos P., Jahn R. & Matevski V., 2009. New and validated high-rank syntaxa from Europe. Lazaroa 30: 267-276.

Mucina L., Grabherr G. & Ellmauer Th., 1993. Die Pflanzengesellschaften Österreichs. Teil. I. Anthropogene Vegetation. Gustav Fischer Verlag, Jena etc.

Ninot J.M., Carrera J., Carrilo E. & Vigo J., 2000. Syntaxonomic conspectus of the vegetation of Catalonia and Andorra. I: Hygrophilous herbaceous communities. Acta Bot. Barcinon. 46: 191-237.

Nordstrom K. F., Gamper U., Fontolan G., Bezzi A. & Jackson N.L., 2009. Characteristics of Coastal Dune Topography and Vegetation in Environments Recently Modified Using Beach Fill and Vegetation Plantings, Veneto, Italy. Environmental Management 44: 1121–1135.

Oberdorfer E., 1948. Gliederung und Umgrenzung der Mittelmeervegetation auf der Balkamhalbinsel. Ber. Geobot. Forsch. Inst. Rübel, Zürich.

Oberdorfer E., 1952. Beitrag zur kenntnis der Nordagaischen Kistenvegetation. Vegetatio 3: 329-349.

Oksanen J., 2013. Multivariate analyses of ecological communities in R: vegan tutorial. 43 p.

Oksanen J., Blanchet F.G., Kindt R., Legendre P., Minchin P.R., O'Hara R.B., Simpson G.L., Solymos P., Stevens M.H.H. & Wagner H., 2013. vegan: Community Ecology Package. R package version 2.0-10. http://CRAN.R-project.org/package=vegan

Panitsa M., 1997. Contribution to the knowledge of the flora and vegetation of East Aegean islets. Ph. D. Thesis, University of Patras, Patras, Greece. (In Greek).

Panitsa M. & Tzanoudakis D., 1998. Contribution to the study of the Greek flora: Flora and vegetation of the E Aegean islands Agathonisi and Pharmakonisi. Willdenowia 28: 95-116.

Panitsa M., Bazos I., Dimopoulos P., Zervou S., Yannitsaros A. & Tzanoudakis D., 2004. Contribution to the study of the flora and vegetation of the Kithira island group: Offshore islets of Kithira (S Aegean, Greece). Willdenowia 34: 101-115.

Panitsa M., Dimopoulos P., Iatrou G. & Tzanoudakis D., 1994. Contribution to the study of the Greek flora: Flora and vegetation of the Enousses islands group. Flora 189: 69-78.

Panitsa M., Snogerup B., Snogerup S. & Tzanoudakis D., 2003. Floristic investigation of Lemnos island (NE Aegean area, Greece). Willdenowia 33: 79-105.

Paulus H.F. & Gack C. 1992. Die Gattung Ophrys (Orchidaceae) auf der Kykladeninsel Naxos: Daten zur Bestäubungsbiologie und zur Floristik. Mitt. Arbeitskreis Heimische Orchid. Baden-Württemberg 24 (3): 403-449.

Pavlidis G.A., 1976a. Untersuchungen über die Vegetationsverhältnisse der Küste der Sithonia-Halbinsel. Veröff. Geobot. Inst. ETH, Stiftg. Rübel, Zürich 56: 5-20.

Pavlidis G.A., 1976b. Flora and vegetation of the peninsula Sithonia, Chalkidiki. Ph. D. Thesis, Aristotelian University of Thessaloniki, Thessaloniki, Greece. (In Greek).

Phitos D., Constantinidis T & Kamari G., 2009. The Red Data Book of Rare and Threatened plants of Greece vol. 1(A-D) & vol. 2 (E-Z), (in Greek). Hellenic Botanical Society, Patras.

Pignatti S., 1966. La vegetazione alofila della lagua Veneta. Ist. Veneto Sci. Lett. Art. Classe Sci. Mat. Natur. 33: 1-174.

Platis P.D. & Papanastasis V.P., 2003. Relationship between shrub cover and available forage in Mediterranean shrublands. Agrofor Syst 57: 59–67.

Pop I., 2002. Vegetaţia solurilor saraturoase din România. Contrib. Bot. 35: 285-328.

Prisco I., Acosta A.T.R. & Ercole S., 2012. An overview of the Italian coastal dune EU Habitats. Annali di Botanica (Roma) 2: 39-48.

Quézel P. & Médail F., 2003. Écologie et Biogéographie des forêts du Bassin Méditerranéen. Elsevier, Paris. 571 pp.

Raunkiaer C., 1934. The life forms of plants and statistical geography. Claredon, Oxford. 632 pp.

Raus T., 1980. Die Vegetation Ostthessaliens (Griechenland). II. *Querco-Fagetea* und azonale Gehölzgesellschaften. Bot Jahrb Syst 101: 313–361.

Raus T., 1996. Flora von Paros und Antiparos (Kykladen, Griechenland) — Ann. Naturhist. Mus. Wien 98b: 237-278.

Raus T., 2012. Gefäßpflanzen von Milos (Kykladen, Griechenland) – eine floristiche Handreichung. Verh. Zool.-Bot. Ges. Österreich 148/149: 197-235.

Rechinger K.H., 1943. Flora Aegaea. Flora der Inseln und Halbinseln des ägäschen Meeres. Akad. Wiss. Wien, Math.-Naturwiss. Kl., Denksch. 105/1.

Rechinger K.H., 1950. Grundzüge der Pflanzenverbreitung in der Ägäis I-III. Vegetatio 2: 55-119; 239-308; 365-386.

Rechinger K.H., 1951. Phytogeographia Aegaea. Denkschriften Osterreich. Akad. Wiss. Wien, Math.-naturwiss. Klasse 105: 1-208. Wien.

Riedl H., 1984. Paleoclimatic aspects of the geomorphology of the Cyclad archipelago (Greece) with references to methodological problems. Paleobiologie continentale 14 (2): 403-413.

Rivas-Martinez S., 1975. La vegetación de la clase Quercetea ilicis en España y Portugal. Anal. Inst. Bot. Cavanilles 31(2): 205-259.

Rivas-Martínez S., 2011. Mapa de series, geoseries y geopermaseries de vegetación de España [Memoria del mapa de vegetación potential de España] Parte II. Intinera Geobot. 18.

Rivas-Martínez S., Costa M., Castrovejo S & Valdés E., 1980. Vegetación de Donana (Huelva, España). Lazaroa 2: 5-190.

Rivas-Martínez S., Díaz T.E., Fernández-González F., Izlo J., Loidi J., Lousã M. & Penas A., 2002. Vascular plant communities of Spain and Portugal. Addenda to the syntaxonomical checklist of 2001. Intinera Geobot. 15 (1, 2): 5-922.

Rivas-Martínez S., Fernández-González F., Loidi J., Lousa M. & Penas A., 2001. Syntaxonomical checklist of vascular plant communities of Spain and Portugal to association level. Itinera Geobot. 14: 5-341.

Rivas-Martínez S., Penas A. & Díaz T. E., 2004a. Bioclimatic Map of Europe, Bioclimates. Cartographic Service. University of León, Spain.

Rivas-Martínez S., Penas A. & Díaz T. E., 2004b. Bioclimatic Map of Europe, Thermoclimatic Belts. Cartographic Service. University of León, Spain.

Rückbrodt D., Rückbrodt U. & Gügel E., 1998. Orchideen-Neufunde für die Kykladeninseln Naxos und Paros. — Ber. Arbeitskreis. Heimische Orchid. 14 (2): 29-31.

Runemark H., 1968. Studies in the Aegean Flora. XIII. *Tordylium* L. (*Umbelliferae*). Bot. Not. 121: 233-258.

Runemark H., 1970. The plant geography of the Central Aegean. Feddes Reper. 81: 229-251.

Runemark H., Snogerup S. & Nordenstam B., 1960. Studies in the Aegean Flora I. Floristic Notes. Bot. Not. 113: 421-450.

Salman A.H.P.M. & Strating K.M., 1992. European coastal dunes and their decline since 1900. European Union for Coastal Conservation, Leiden, NL.

Sarika M., 2012. Flora and vegetation of some coastal ecosystems of Sterea Ellas and eastern continental Greece. Lazaroa 33: 65-99.

Sarika M., Dimopoulos P. & Yannitsaros A., 2005. Contribution to the knowledge of the wetland flora and vegetation of Amvrakikos Gulf, W Greece. Willdenowia 35: 69-85.

Sarika-Hatzinikolaou M., Koumpli-Sovantzi L. & Yannitsaros A., 1996. The vascular flora of Lake Kalodhiki (Ipiros, NW Greece). Webbia 50 (2): 223-236.

Sarika-Hatzinikolaou M., Yannitsaros A. & Babalonas D., 2003. The macrophytic vegetation of seven aquatic ecosystems of Epirus (NW Greece). Phytocoenologia 33: 93-151.

Sarlis G.P., 1981. Contribution to the knowledge of the flora and vegetation of the islands and islets of the Northern Evoikos Gulf. Ph. D. Thesis, Athens, Greece. (In Greek).

Sauvage Ch., 1963. Le quotient pluviothermique d' Emberger, son utilisation et la representation géographique de ses variations au Maroc. Ann. Phys. Globe Météo. Inst. Sci. Chérif. 20: 11-23.

Seabloom E.W. & Wiedemann A.M., 1994. Distribution and effects of *Ammophila breviligulata* Fern. (American beachgrass) on the foredunes of the Washington coast. Journal of Coastal Research 10: 178–188.

Seiser K., 2002. Ophrys-Funde auf Naxos und der Peloponnes. Ber. Arbeitskreis. Heimische Orchid. 18 (2): 124-125.

Sell P.D., 1976. Hymenonema Cass. In: Tutin T.G., Heywood V.H., Burges N.A., Moore D. M., Valentine D.H., Walters S.M. & Webb D.A. (Eds.). Flora Europaea 4: 305-306. Cambridge.

Snogerup S., Snogerup B. & Stamatiadou E., 2006. Flora and vegetation of Andros, Kiklades, Greece. Ann. Mus. Goulandris 11: 85-270.

Spanou S., Verroios G., Dimitrellos G., Tiniakou A. & Georgiadis Th., 2006. Notes on flora and vegetation of the sand dunes of western Greece. Willdenowia

36: 235-246.

Stanisci A., Acosta A., Ercole S. & Blasi C., 2004. Plant communities on coastal dunes in Lazio (Italy). Annali di Botanica 4: 115-128.

Strid A. & Tan K., 1997. Flora Hellenica. Vol. 1. Koeltz Sci. Books, Koenigstein.

Strid A. & Tan K., 2002. Flora Hellenica. Vol. 2. Ruggell: A.R.G Gantner Verlag K.G.

Strid A., 2004. Phytogeographia Aegaea and the Flora Hellenica Database. Ann. Naturhist. Mus. Wien 98B Suppl.: 279-289.

Sýkora K.V., Wageningen D., Babalonas D. & Papastergiadou E., 2003. Strandline and sand-dune vegetation of coasts of Greece and of some other Aegean countries. Phytocoenologia 33 (2-3): 409-446.

Tadros T.M. & Atta B.A.M., 1958. Further contribution to the study of the sociology and ecology of the halophilous plant communities of Mareotis (Egypt). Vegetatio 8: 137-160.

Tekke R., 1993. EUCC's 'Coastal woodlands and forestry roject'. In: Tekke R. & Salman A. (Eds.). Coastal dune woodlands along the Atlantic & North Seashores. EUCC Internal report series 4: 33-41. EUCC, Leiden, N.

Theurillat J.P. & Moravec J., 2003. Index of new names of syntaxa published in 1994. Folia Geobot. 33: 441-473.

Thunnell R.C. & Williams D.F., 1983. The steppic development of Pliocene-Pleistocene palaeoclimatic and palaoceanographic conditions in the Mediterranean oxygen isotope studies of DSDP sites 125 & 132. Utrecht Micropal. Bull. 30: 111-127.

Tomaselli V., Di Pietro R. & Sciandrello S., 2011. Plant communities structure and composition in three coastal wetlands in southern Apulia (Italy). Biologia 66 (6): 1027-1043.

Trabaud L., 1987. Fire and survival traits of plants. In: Trabaud L. (Ed.). The role of fire in ecological systems. SPB, The Hague. Pp 65– 89.

Trinajstić I., 1987. Fitocenološko-tipološka analiza sastojina makije somine (*Juniperus phoenicea* L.) u Hrvatskom primorju. Acta Bot. Croat. 46: 115-121.

Trinajstić I., 2009. *Suaeda vera* Forsk. ex J.F. Gmelin in the plant cover of Croatian. Nat. Croat. 18 (2): 387-391.

Tselepidakis I.G. & Theocharatos G.A., 1989. A Bioclimatic Classification of the Greek Area. Theor. Appl. Climatol. 40: 147-153.

Tsiourlis G., Konstantinidis P. & Xofis P., 2007. Taxonomy and ecology of phryganic communities with *Sarcopoterium spinosum* (L.) Spach of the Aegean (Greece). Israel Journal of Plant Sciences 55: 15-34.

Tsiourlis G., Konstantinidis P. & Xofis P., 2009. Syntaxonomy and synecology of *Quercus coccifera* Mediterranean shrublands in Greece. J. Plant Biol. 52: 433-447.

Tsiourlis GM., Kasapidis P. & Konstandinidis P., 2001. The role of grazing on the maintain and degradation of Mediterranean Ecosystems in Central Crete, Greece. In: Radoglou K. (Ed.). Proceedings of the Int. Conf. Forest Research: a challenge for an integrated European approach, vol. 2: 715–721.

Turland N.J., Chilton L. & Press J.R., 1993. Flora of the Cretan area; Annotated Checklist & Atlas .The Natural History Museum, London pp. 439.

Tutin T.G., Burges N.A., Chater A.O., Edmonson J.R., Heywood V.H., Moore D.M., Valentine D.H., Walters S.M. & Webb D.A., 1968-1980. Flora Europaea. Vols. 2-5. Cambridge Univ. Press, Cambridge.

Tutin T.G., Heywood V.H., Burges N.A., Moore D.M., Valentine D.H., Walters S.M. & Webb D.A., 1993. Flora Europaea. 2nd Edition. Vol. 1. Cambridge University Press, Cambridge.

Tzanoudakis D., Panitsa M., Trigas P. & Iatrou G., 2006. Floristic and phytosociological investigation of the island Antikythera and nearby islets (SW Aegean, Greece). Willdenowia 36: 285-301.

Tzonev R., Lysenko T., Gussev Ch. & Zhelev P., 2008. The halophytic vegetation in south-east Bulgaria and along the Black Sea Coast. Hacquetia 7 (2): 95-121.

Urai J.L., Schuiling R.D. & Jansen J.B.H., 1990. Alpine deformation on Naxos (Greece). In: Knipe R.J. & Rutter E.H. (Eds.). Deformation Mechanisms, Rheology and Tectonics. Geological Society Special Publication 54: 509-522.

Vallianatou I., 2005. Geobotanical study of Salamis, Egina and other islands of the Saronic Gulf (Hellas). Ph. D. Thesis, University of Athens, Athens, Greece. (In Greek, with English summary).

van der Maarel E., 1979a. Transformation of cover-abundance values in phytosociology and its effects on community similarity. Vegetatio 39: 97-114.

van der Maarel E., 1979b. Environmental management of coastal dunes in the Netherlands. In: Jefferies R.L. & Davy A.J. (Eds.). Ecological processes in coastal environments. Blackwell, Oxford, UK. Pp. 543-570.

van der Maarel E., 1993. Geographical and ecological types of dry coastal ecosystems. In: van der Maarel E. (Ed.). Ecosystems of the World 2A, Dry Coastal Ecosystems, Polar Regions and Europe. Elsevier, Amsterdam, NL. Pp. 7-14.

van der Maarel E., 2003. Some remarks on the functions of European coastal ecosystems. Phytocoenologia 33 (2-3): 187-202.

van Wijck C., Grillas P., de Groo C.J. & Ham L., 1994. A comparison between the biomass production of *Potamogeton pectinatus* L. and Myriophyllum spicatum L. in the Camarque (southern France) in relation to salinity and sediment characteristics. Vegetatio 113: 171-180

van Wijk R.J., van Goor E.M.J. & Verkley J.A.C., 1988. Ecological studies on *Potamogeton pectinatus*

L. II. Autecological characteristics, with emphasis on salt tolerance, intraspecific variation and isoenzyme patterns. Aquat. Bot. 32: 239-260.

Vasiliou A., Babalonas D. & Greuter W., 2000. Analysis of vegetation and soil conditions of the Epanomi lagoon complex. In: Kamari G., Psaras G. & Konstandinidis Th. (Eds.). Proceedings of the 8th Scientific Congress of the Greek Botanical Society 5. Pp. 89-95. Patras, Greece.

Velitzelos E. & Zouros N., 1998. New results on the petrified forest of Lesvos. Proceedings of the 8th Int. Congr. Patras. Bull. Geol. Soc. Greece 32 (2): 133-142. Athens.

Verhoeven J.T.A., 1979. The ecology of Ruppia-dominated communities in Western Europe, I. Distribution of *Ruppia* representatives in relation to their autecology. Aquat. Bot. 6: 197-268.

Vitsou- Labraki A., Tiniakou A. & Georgiadis Th., 2008. Ecological parameters of the vegetation types in the coastal areas of Strofylia and Acheloos Delta. Proceedings of the 10th Scientific Congress of the Hellenic Botanical Society: 67-75, Ioannina, Greece. (In Greek).

Vlachos A., 2006. Flora, vegetation and ecology of the Vardousia mountain chain. Ph. D. Thesis, University of Patras, Patras, Greece. (In Greek, with English summary).

Weber H.E., Moravec J. & Theurillat J.P., 2000. International Code of Phytosociological Nomenclature, 3rd edition. J. Veg. Sc. 11: 739-768.

Westhoff V. & Van der Maarel E., 1980. The Braun-Blanquet approach', in R.H. Whittaker (ed.), Classification of plant communities, pp. 287–399, W Junk, The Hague.

Wildi O., 2010. Data Analysis in Vegetation Ecology. Wiley-Blackwell. John Wiley & Sons, Ltd: Chichester, UK. 211 p.

Wolff W.J., 1968. The halophilous vegetation of the lagoons of Mesolonghi, Greece. Vegetatio 16: 95-134.

Yurdakulol E., Oncel I., Demirors I., Yıldız A. & Keleş Y., 1996. Ecological and syntaxonomical investigation of salt marshes vegetation in the vicinity of Burdur and Acıgol (Denizli- Turkey). Ecologia Mediterrenea 22: 51–61.

Zacharias I., Dimitriou E., Dekker A. & Dorsman E., 2007. Overview of temporary pools in the Mediterranean region: Threats, management and conservation issues. Journal of Environmental Biology 28 (1): 1-9.

Zervou S., 2011. The flora and vegetation of Kalimnos Island (Dodekanisa, Greece). Ph. D. Thesis, University of Athens, Athens, Greece. (In Greek, with English summary).

Zohary M., 1973. Geobotanical foundations of the Middle East. Gustav Fischer Verlag, Stuttgart, Germany and Swets & Zeitlinger, Amsterdam, The Netherlands.

Appendix I: List of taxa found in the invesigated regions. Abbreviations are: Na (Naxos), AK (Ano Koufonisi), KK (Kato Koufonisi), Ir (Iraklia), Sh (Schinousa), Ke (Keros), Gl (Glaronisi).

	Life form	Chorological type	Distribution
Pteridophyta			
Aspleniaceae			
Asplenium ceterach L.	H	European-SW Asian	Na, Ir, Ke
Dennstaedtiaceae			
Pteridium aquilinum (L.) Kuhn in Kersten	G	Cosmopolitan	Na
Polypodiaceae			
Polypodium cambricum L.	G	Mediterranean	Na
Pteridaceae			
Allosorus acrosticus (Balb.) Christenh. in Greuter & Raab-Straube	G	Mediterranean	Ir, Ke
Anogramma leptophylla (L.) Link	Th	Cosmopolitan	Na
Selaginellaceae			
Selaginella denticulata (L.) Spring	H	Mediterranean	Na, AK, Ke
Spermatophyta			
Gymnospermae			
Cupressaceae			
Juniperus macrocarpa Sm. in Sibth. & Sm.	Ph	Mediterranean	Na, AK, KK, Ke, Ir
Juniperus phoenicea L.	Ph	Mediterranean	Na
Ephedraceae			
Ephedra foeminea Forssk.	Ph	Mediterranean	Na, AK
Angiospermae Dicotyledones			
Aceraceae			
Acer sempervirens L.	Ph	E Mediterranean	Na
Aizoaceae			
Mesembryanthemum nodiflorum L.	Th	Mediterranean	Sh

Anacardiaceae			
Pistacia lentiscus L.	Ph	Mediterranean	Na, AK, KK, Ke, Ir, Sh, Gl
Apiaceae			
Bupleurum gracile d'Urv.	Th	Mediterranean	Na
Bupleurum semicompositum L.	Th	Mediterranean-SW Asian	Na
Crithmum maritimum L.	Ch	Mediterranean-European	KK, Ir
Daucus guttatus Sm. in Sibth. & Sm.	Th	Mediterranean	Na
Echinophora spinosa L.	H	Mediterranean	Na
Eryngium campestre L.	H	European-SW Asian	Na
Eryngium maritimum L.	G	Mediterranean-European	Na, AK, Ir. Sh
Hellenocarum multiflorum (Sm.) H. Wolff	G	Mediterranean	Na
Lagoecia cuminoides L.	Th	Mediterranean-European	Na, AK
Orlaya daucoides (L.) Greuter in Greuter & Rech. f.	Th	Mediterranean-SW Asian	Na
Pseudorlaya pumila (L.) Grande	H	Mediterranean	Na, AK, Ir, Sh
Scaligeria napiformis (Spreng.) Grande	H	E Mediterranean	Na, Ir
Scandix australis L.	Th	Mediterranean-European	Ke
Scandix pecten-veneris L.	Th	European-SW Asian	Na, Ke
Smyrnium perfoliatum L. subsp. *rotundifolium* (Mill.) Hartvig in Strid	H	Mediterranean	Na
Thapsia garganica L.	H	Mediterranean	Na
Tordylium apulum L.	Th	Mediterranean	Na, Ir
**Tordylium hirtocarpum* Candargy	Th	E Mediterranean	Ke
Torilis leptophylla (L.) Rchb. f.	Th	European-SW Asian	Na
Torilis nodosa (L.) Gaertn.	Th	European-SW Asian	Na
Apocynaceae			
Nerium oleander L.	Ph	Mediterranean	Na
Araceae			
Arisarum vulgare O. Tag. Tozz. subsp. *vulgare*	G	Mediterranean	Na, KK, Ke, Ir, Sh, Gl
Arum italicum Mill.	G	Mediterranean-European	Na
Dracunculus vulgaris Schott. in Schott & Endl.	G	Mediterranean	Na
Araliaceae			
Hedera helix L.	Ph	Mediterranean-European	Na
Asteraceae			
Achillea maritima (L.) Ehrend. & Y.P. Guo	H	Mediterranean-Atlantic	Na
Aetheorhiza bulbosa (L.) Cass.	G	Mediterranean	Na, AK, KK, Ke, Ir, Sh
Anthemis chia L.	Th	Mediterranean	Na
Anthemis rigida Heldr.	H	E Mediterranean	Na, AK
Aractylis cancellata L.	Th	Mediterranean	Na, AK, Sh
Bellium minutum (L.) L.	Th	Mediterranean	Gl
Calendula arvensis L.	Th	Mediterranean-European	Na, AK, Sh
Carduus pycnocephalus L.	H	Mediterranean-European	Na
Carlina corymbosa L.	H	Mediterranean	Na, AK, KK, Sh
Centaurea raphanina Sm. in Sibth. & Sm.	H	Greek Endemic	Na, AK, KK, Ke, Ir, Sh, Gl
Cichorium spinosum L.	Ch	Mediterranean	Na, AK, Ir
Crepis foetida L.	H	Mediterranean-European	Na
Crepis multiflora Sm. in Sibth. & Sm.	Th	E Mediterranean	Na, Sh
Crupina crupinastrum (Moris) Vis.	Th	European-SW Asian	Na, Sh
Filago aegaea Wagenitz subsp. *aristata* Wagenitz	Th	E Mediterranean	Na
**Filago cretensis* Gand.	Th	Greek Endemic	Na
Filago eriocephala Guss.	Th	Mediterranean	Na
Filago pygmaea L.	Th	Mediterranean	Na
Glebionis coronaria (L.) Spach	Th	Mediterranean	AK
Helichrysum italicum (Roth) G. Don in Loudon	Ch	Mediterranean	Na, Ir
Helichrysum stoechas (L.) Moench subsp. *barrelieri* (Ten.) Nyman	Ch	Mediterranean	Na, AK,, KK, Ke, Ir, Sh
Hedypnois rhagadioloides (L.) F. W. Schmidt	Th	Mediterranean	Na, Ak, Sh
**Hymenonema graecum* (L.) DC.	H	Greek Endemic	Na
Hyoseris lucida L.	H	Mediterranean	Na, Ir
Hyoseris scabra L.	Th	Mediterranean	Na, AK, Ir
Hypochaeris achyrophorus L.	Th	Mediterranean	Na, Ke, Ir, Sh
Hypochaeris glabra L.	Th	Mediterranean	Na
**Leontodon graecus*Boiss. & Heldr. in Boiss.	H	Greek Endemic	Na
Leontodon tuberosus L.	H	Mediterranean	Na, AK, KK, Ke, Ir, Sh
Pallenis spinosa (L.) Cass.	H	Mediterranean	Na, AK, Sh
Phagnalon rupestre (L.) DC. subsp. *graecum* (Boiss. & Heldr.) Batt.	Ch	Mediterranean	Na, AK, Ke, Ir, Sh
Phagnalon saxatile (L.) Cass.	Ch	Mediterranean	Na

Picnomon acarna (L.) Cass.	Th	Paleotemperate	Na
Picris pauciflora Willd.	Th	European-SW Asian	Na
Podospermum canum C.A. Mey.	H	European-SW Asian	Na, Ak
Reichardia picroides (L.) Roth	H	Mediterranean	Na, AK, KK, Ke, Sh
Rhagadiolus stellatus (L.) Gaertn.	Th	Mediterranean	Na
Senecio vernalis Waldst. & Kit.	Th	European-SW Asian	Na, AK, , Ke, Ir, Gl
Senecio vulgaris L.	Th	Paleotemperate	AK, Ke, Ir
Sonchus oleraceus L.	Th	Mediterranean-European	Na
**Staehelina fruticosa* (L.) L.	Ch	Greek Endemic	Ir
Taraxacum sp.	H		Ak, Ke
Tolpis umbellata Bertol.	Th	Mediterranean	Na
Tragopogon sp.			Na
Urospermum picroides (L.) F.W. Schmidt	Th	Mediterranean	Na, AK, Sh
Boraginaceae			
Alkanna tinctoria Tausch	H	E Mediterranean	Na
Echium angustifolium Mill.	H	E Mediterranean	Na
Echium arenarium Guss.	H	Mediterranean	Na, AK, Sh
Buglossoides arvensis (L.) I.M. Johnst.	Th	Mediterranean	Ir
Brassicaceae			
**Aethionema saxatile* (L.) R.Br. in W. T. Aiton subsp. *creticum* (Boiss. & Heldr.) I.A.Andersson & al.	Ch	Greek Endemic	Na
Allyssum sp.			Ir
Biscutella didyma L.	Th	Mediterranean	Na, AK, Ir, Sh
Cakile maritima Scop.	Th	Mediterranean-European	Na, AK, Ir, Sh
Capsella bursa-pastoris (L.) Medik.	Th	Cosmopolitan	AK
Cardamine hirsuta L.	Th	Cosmopolitan	Na
Clypeola jonthlaspi L.	Th	Mediterranean-SW Asian	Na
Hirschfeldia incana (L.) Lagr.-Foss.	Th	European-SW Asian	Na
Malcolmia chia (L.) DC.	Th	E Mediterranean	Na
Malcolmia flexuosa (Sm.) Sm. in Sibth. & Sm.	Th	E Mediterranean	Na, AK, Gl
Matthiola tricuspidata (L.) R.Br. in W. T. Aiton	Th	Mediterranean	Na, Ir, Sh
Sisymbrium officinale (L.) Scop.	Th	Euro-Siberian/[Cosmopolitan]	Na
Sisymbrium orientale L.	Th	European-SW Asian	Na
Callitrichaceae			
**Callitriche brutia* Petagna	A	Mediterranean-European	Na
Campanulaceae			
Campanula erinus L.	Th	Mediterranean-European	Na
Legousia falcata (Ten.) Fritsch ex Janch.	Th	Mediterranean	Na
Legousia hybrida (L.) Delarbre	Th	European-SW Asian	Na
Caprifoliaceae			
Lonicera etrusca Santi	Ph	Mediterranean	Na
Caryophyllaceae			
**Arenaria aegaea* Rech. f.	Th	Greek Endemic	Ke
Arenaria leptoclados (Rchb.) Guss.	Th	European-SW Asian	Ir
Cerastium comatum Desv.	Th	E Mediterranean	Na
**Dianthus cinnamoneus* Sm. in Sibth. & Sm. subsp. *cinnamoneus*	H	Greek Endemic	Na
Dianthus fruticosus L.	Ch	Greek Endemic	Na
Minuartia mediterranea (Link) K. Malý	Th	Mediterranean	Na
Paronychia argentea Lam.	H	Mediterranean	Na
Paronychia capitata (L.) Lam.	H	Mediterranean	Na
Paronychia macrosepala Boiss.	H	E Mediterranean	AK, KK
Petrorhagia dubia (Raf.) G. López & Romo	Th	Mediterranean	Na
Silene colorata Poir.	Th	Mediterranean	Na, Ir
Silene cretica L.	Th	Mediterranean	Na
Silene nocturna L.	Th	Mediterranean	Na, AK
**Silene sartorii* Boiss. & Heldr. in Boiss.	Th	Greek Endemic	Na
Silene sedoides Poir.	Th	Mediterranean	Ke, Sh
Spergularia bocconei (Scheele) Asch. & Graebn.	Th	Mediterranean-Atlantic	Na
Spergularia salina J. Presl & C. Presl	Th	Paleotemperate	Na
Stellaria apetala Ucria	Th	European-SW Asian	Na
Chenopodiaceae			
Arthrocnemum macrostachyum (Moric.) K. Koch	Ch	Mediterranean	AK
Atriplex prostrata DC. in Lam. & DC.	Ch	Euro-Siberian	Na
Halimione portulacoides (L.) Aellen	Ch	Mediterranean-European	Na

Salsola soda L.	Th	Paleotemperate	AK
Salsola tragus L.	Th	Paleotemperate [Cosmopolitan]	Na, AK
Sarcocornia perennis (Mill.) A.J. Scott	Ch	Mediterranean-Atlantic	Na
Suaeda vera J.F. Gmel.	Ch	Mediterranean-Atlantic	Na
Cistaceae			
Cistus creticus L.	Ch	Mediterranean	Na, Ir, Sh
Cistus monspeliensis L.	Ch	Mediterranean	Na
Cistus parviflorus Lam.	Ch	E Mediterranean	Na, AK, KK, Ir, Sh
Cistus salviifolius L.	Ch	Mediterranean	AK, KK, Ke, Ir, Sh
Helianthemum apenninum (L.) Mill.	Ch	Mediterranean	AK
Fumana arabica (L.) Spach	Ch	Mediterranean	Na, AK, KK, Ir, Sh
Fumana thymifolia (L.) Webb	Ch	Mediterranean	Na, AK, Ke, Sh
Tuberaria guttata (L.) Fourr.	Th	Mediterranean-Atlantic	Na, Ir
Convolvulaceae			
Convolvulus althaeoides L.	H	Mediterranean	Na
Convolvulus oleifolius Desr. In Lam.	Ch	Mediterranean	Na, Gl
Cressa cretica L.	Ch	Subtropical-Tropical	Na
Cuscuta sp.	Th		AK, KK
Crassulaceae			
Sedum hispanicum L.	H	European-SW Asian	Na
Sedum litoreum Guss.	Th	Mediterranean	Na, AK, Ke, Ir
Umbilicus horizontalis (Guss.) DC.	G	Mediterranean	Na
**Umbilicus parviflorus* (Desf.) DC.	G	Balkan-Anatolian	Na
Cucurbitaceae			
Bryonia cretica L.	G	E Mediterranean	Na
Ericaceae			
Erica manipuliflora Salisb.	Ch	Mediterranean	Na, AK, KK, Ke, Ir
Euphorbiaceae			
Euphorbia characias L.	H	Mediterranean	Na
Euphorbia exigua L.	Th	Mediterranean-European	Na, AK, KK, Ke, Ir
Euphorbia paralias L.	H	Mediterranean-European	Na, AK
Euphorbia peplis L.	Th	Mediterranean-European	Na, AK, Ke, Ir, Sh
Mercurialis annua L.	Th	Paleotemperate	Ke, Ir
Fabaceae			
Anthyllis hermanniae L.	Ch	Mediterranean	Na, AK, KK, Ir, Sh
Anthyllis vulneraria L.	H	European	Na
Astragalus hamosus L.	Th	Mediterranean-SW Asian	AK
Astragalus spruneri Boiss.	H	Balkan	Na, AK, KK, Gl
Bituminaria bituminosa (L.) C.H. Stirt.	H	Mediterranean-European	Na, AK
Calicotome villosa (Poir) Link in Schrad.	Ph	Mediterranean	Na, AK
Coronilla scorpioides (L.) W.D.J. Koch	Th	Mediterranean-European	Na, KK
Genista acanthoclada DC.	Ch	E Mediterranean	Na, AK, KK, Ir, Sh
Hippocrepis biflora Spreng.	Th	Mediterranean-SW Asian	AK
Hippocrepis ciliata Willd.	Th	Mediterranean	Na
Hymenocarpus circinnatus (L.) Savi	Th	Mediterranean	Na
Lotus cytisoides L.	H	Mediterranean	Na, AK, KK, Ke, Ir, Sh, Gl
Lotus edulis L.	Th	Mediterranean	Na, AK, Ke, Sh, Gl
Lotus ornithopodioides L.	Th	Mediterranean	Na
Medicago coronata (L.) Bartal	Th	Mediterranean-SW Asian	Na
Medicago disciformis DC.	Th	Mediterranean	Na, AK, Ir
Medicago littoralis Rohde ex Loisel.	Th	Mediterranean-SW Asian	Na, AK, Sh
Medicago marina L.	Ch	Mediterranean-European	Na, AK, Ir, Sh
Medicago monspeliaca (L.) Trautv.	Th	Mediterranean-SW Asian	Na, Sh
Medicago murex Willd.	Th	Mediterranean	Na
Medicago orbicularis (L.) Bartal.	Th	Mediterranean-SW Asian	Na, AK, Ir
Medicago polymorpha L.	Th	Paleotemperate	Na
Medicago praecox DC.	Th	Mediterranean	Na
Medicago rigidula (L.) All.	Th	Mediterranean-SW Asian	Na
Medicago truncatula Gaertn.	Th	Mediterranean-SW Asian	Na
Onobrychis caput-galli (L.) Lam.	Th	Mediterranean	Na
Ononis reclinata L.	Th	Mediterranean-European	Na
Ononis variegata L.	Th	Mediterranean	Na
Ornithopus compressus L.	Th	Mediterranean	Na
Scorpiurus muricatus L.	Th	Mediterranean	Na, AK, Sh
Sulla spinosissima (L.) B.H. Choi H. Ohashi	Th	Mediterranean	Na

Trifolium campestre Schreb.in Sturm	Th	European-SW Asian	Ke, Ir, Sh
Trifolium glomeratum L.	Th	European-SW Asian	Na
Trifolium grandiflorum Schreb,	Th	Mediterranean-SW Asian	Na
Trifolium infamia-ponertii Greuter	Th	Mediterranean	Na
Trifolium nigrescens Viv.	Th	Mediterranean	Na
Trifolium physodes M. Bieb.	H	Mediterranean	Na
Trifolium scabrum L.	Th	European-SW Asian	Na, AK, Ir, Sh
Trifolium stellatum L.	Th	Mediterranean	Na, Ir
Trifolium tomentosum L.	Th	Mediterranean	Na
Trifolium suffocatum L.	Th	Mediterranean-European	Na
Trifolium uniflorum L.	H	E Mediterranean	Na, AK, KK, Ke, Gl
Trigonella corniculata (L.) L.	Th	Mediterranean	Sh
Vicia cretica Boiss. & Heldr. in Boiss.	Th	E Mediterranean	Na, Ir
Vicia sativa L. subsp. *sativa*	Th	Paleotemperate	Na
Vicia villosa Roth	Th	European-SW Asian	Na
Fagaceae			
Quercus coccifera L..	Ph	Mediterranean	Na
Frankeniaceae			
Frankenia hirsuta L.	Ch	Mediterranean-SW Asian	Na, AK, Gl
Fumariaceae			
Fumaria kralikii Jord.	Th	E Mediterranean	Na
Gentianaceae			
Blackstonia perfoliata (L.) Huds.	Th	Mediterranean-European	Na
Geraniaceae			
Erodium chium (L.) Willd.	Th	Mediterranean	Ke
Erodium cicutarium (L.) L'Hér. in Aiton	Th	Circumtemperate	Na, AK, Ke
Erodium malacoides (L.) L'Hér. in Aiton	Th	Mediterranean-SW Asian	Na, AK
Geranium lucidum L.	Th	European-SW Asian	Na
Geranium molle L.	Th	Paleotemperate	AK, Ir, Sh
Geranium purpureum Vill.	Th	Mediterranean	Na, Ir
Geranium rotundifolium L.	Th	Paleotemperate	Na
Hypericaceae			
Hypericum empetrifolium Willd.	Ch	E Mediterranean	Ir
Hypericum perfoliatum L.	H	Mediterranean	Na
Hypericum perforatum L.	H	Paleotemperate	Na
Lamiaceae			
Ballota acetabulosa (L.) Benth.	Ch	Balkan-Anatolian	Na, Ir
Micromeria nervosa (Desf.) Benth.	Ch	Cosmopolitan	Na, KK, Ke, Ir, Sh
Phlomis fruticosa L.	Ph	Mediterranean	Na
Prasium majus L.	Ph	Mediterranean	Na, AK, KK, Ke, Ir, Sh, Gl
Salvia verbenaca L.	H	Mediterranean-Atlantic	Na
Satureja thymbra L.	Ch	Mediterranean	Na
Sideritis curvidens Stapf	Th	E Mediterranean	Na
Stachys sp.			Na
Teucrium brevifolium Schreb.	Ch	Mediterranean	Na, AK, KK, Ke, Ir, Sh
Teucrium capitatum L.	Ch	Mediterranean	Na, AK, KK, Sh, Gl
Teucrium divaricatum Heldr.	Ch	Mediterranean	Na, AK, KK, Ir, Sh
Thymbra capitata (L.) Cav.	Ch	Mediterranean	Na, AK, KK, Ke, Ir, Sh
Linaceae			
Linum strictum L.	Th	Mediterranean	Na, AK, KK, Ke, Ir, Sh
Linum trigynum L.	Th	Mediterranean	Na
Lythraceae			
Lythrum hyssopifolia L.	Th	European-SW Asian	Na
Malvaceae			
Malva cretica Cav.	Th	Mediterranean	AK
Malva parviflora L.	Th	Mediterranean-SW Asian	Na
Malva sylvestris L.	Th	European-SW Asian	AK
Oleaceae			
Olea europaea L. subsp. *europaea*	Ph	Mediterranean	Na, AK, Sh
Orobanchaceae			
Bellardia latifolia (L.) Cuatrec.	Th	European-SW Asian	Ir
Orobanche sp.	Th		Na, Sh
Phelipanche ramosa (L.) Pomel	Th	Paleotemperate	Na

Oxalidaceae			
Oxalis pres-caprae L.	G	[S-Afr.]	Na
Plantaginaceae			
Plantago afra L.	Th	Mediterranean	Na
Plantago bellardii All.	Th	Mediterranean	Na, Sh
Plantago cretica L.	Th	E-Mediterranean	Na
Plantago lagopus L.	Th	Mediterranean	Na, AK, Ir, Sh, Gl
Plantago weldenii Rchb.	Th	Mediterranean	Na. AK, Gl
Plumbaginaceae			
**Limonium graecum* (Poir.) Rech. f.	Ch	Greek Endemic	Na, AK, KK, Ke, Gl
Limonium sinuatum (L.) Mill.	H	Mediterranean	Na
Limonium virgatum (Willd.) Fourr.	Ch	Mediterranean	Na. Ir
Polygalaceae			
Polygala monspeliaca L.	Th	Mediterranean	AK, KK
Polygala venulosa Sm. in Sibth. & Sm.	H	E-Mediterranean	Na, AK
Polygonaceae			
Polygonum maritimum L.	H	Mediterranean-European	Na
Rumex bucephalophorus L.	Th	Mediterranean	Na
Rumex pulcher L.	H	Mediterranean-SW Asian	Na
Rumex tuberosus L.	G	Mediterranean-SW Asian	Na
Primulaceae			
Anagallis arvensis L.	Th	Cosmopolitan	Na, AK, Ke, Ir, Sh
Asterolinon linum-stellatum (L.) Duby in A. DC.	Th	Mediterranean	Na, Ke, Ir, Sh
Cyclamen graecum Link	G	E-Mediterranean	Na
Cyclamen hederifolium Sol. ex Aiton	G	E-Mediterranean	Na
Ranunculaceae			
Adonis microcarpa DC.	Th	Mediterranean-SW Asian	AK
Anemone coronaria L.	G	Mediterranean	KK, Ke, Ir
Clematis cirrhosa L.	Ph	Mediterranean	Na
Nigella doerfleri Vierh.	Th	European-SW Asian	Na
Rhamnaceae	Th	Greek Endemic	
Rhamnus lycioides L. subsp. *oleoides* (L.) Jahand. & Maire	Ph	Mediterranean	Na, AK, KK, Ir
Rosaceae			
Pyrus spinosa Forssk.	Ph	Mediterranean	Na
Sarcopoterium spinosum (L.) Spach	Ch	E Mediterranean	Na, Ir, Sh
Rubiaceae			
Crucianella angustifolia L.	Th	Mediterranean-European	Na
Crucianella latifolia L.	Th	Mediterranean-European	Na
*Galium aparine*L.	Th	European-SW Asian	Na, Ir
Galium murale (L.) All.	Th	Mediterranean	Na, Ir
Galium setaceum Lam.	Th	Mediterranean-SW Asian	Na
Rubia tenuifolia d'Urv.	Ph	E-Mediterranean	Na, AK, KK, Ir
Sherardia arvensis L.	Th	European-SW Asian	Na, AK, Ir, Sh
Theligonum cynocrambe L.	Th	Mediterranean	Na, Ke, Ir
Valantia aprica (Sm.) Tausch	H	Balkan	Na
Valantia hispida L.	Th	Mediterranean	Na, AK, KK, Ke, Ir
Valantia muralis L.	Th	Mediterranean	Na, AK, KK, Ke, Ir, Sh
Rutaceae			
Ruta chalepensis L.	Ch	Mediterranean	Na
Santalaceae			
Osyris alba L.	Ph	Mediterranean	Na
Thesium bergeri Zucc.	H	E Mediterranean	Na
Saxifragaceae			
Saxifraga hederacea L.	Th	E Mediterranean	Na
Scrophullariaceae			
Scrophularia heterophylla Willd.	H	E Mediterranean	Ir
Scrophularia peregrina L.	Th	Mediterranean	Na
Tamaricaceae			
Tamarix sp.	Ph		Na
Thymelaeaceae			
Thymelaea hirstuta (L.) Endl.	Ph	Mediterranean	Ke, Gl
Thymelaea tartonraira (L.) All.	Ph	Mediterranean	AK, Ir
Veronicaceae			
Veronica cymbalaria Bodard	Th	Mediterranean	Na

Urticaceae			
Parietaria cretica L.	Th	E Mediterranean	Na, Ke, Ir
Parietaria judaica L.	H	European-SW Asian	Na
Parietaria lusitanica L.	Th	Mediterranean-European	Na, AK, Ke, Ir
Urtica pilulifera L.	Th	Mediterranean-SW Asian	Na
Valerianaceae			
Valeriana italica Lam.	H	E Mediterranean	Na
Verbenaceae			
Vitex agnus-castus L.	Ph	Mediterranean-SW Asian	Na
Angiospermae Monocotyledones			
Alliaceae			
Allium subhirsutum L.	G	Mediterranean	Na, AK, Ir
Amaryllidaceae			
Pancratium maritimum L.	G	Mediterranean	AK
Asparagaceae			
Asparagus acutifolius L.	Ch	Mediterranean	Na, AK
Asparagus aphyllus L.	Ch	Mediterranean	Na, Ir
Asphodelaceae			
Asphodelus ramosus L. subsp. *ramosus*	G	Mediterranean	Na, AK, KK, Ir, Sh
Colchicaceae			
Colchicum sp.	G		Ke
Cyperaceae			
Carex extensa Gooden	H	Mediterranean-Atlantic	Na
Carex flacca Schreb. subsp. *serrulata* (Spreng.) Greuter in Greuter & I	G	Mediterranean-SW Asian	Na, AK
Cyperus distachyos All.	G	Mediterranean	Na
Schoenoplectus littoralis (Schrad.) Palla	G	Cosmopolitan	Na
Scirpoides holoschoenus (L.) Soják	G	Paleotemperate	Na
Dioscoraceae			
Dioscorea communis (L.) Caddick & Wilkin	H	Mediterranean-European	Na
Hyacinthaceae			
Drimia numidica (Jord. & Fourr.) J.C. Manning & Goldblatt	G	Mediterranean	Na, AK, KK, Ke, Ir, Sh
Muscari commutatum Guss.	G	Mediterranean-European	Na, AK, Ke, Ir
Muscari comosum (L.) Mill.	G	Mediterranean-European	Na
Iridaceae			
Crocus sp.	G		Ke
Moraea sisyrinchium (L.) Ker-Gawl.	G	Mediterranean	Ir
Romulea bulbocodium (L.) Sebast. & Mauri	G	Mediterranean	Na, AK, Ke
Juncaceae			
Juncus heldreichianus Parl.	H	E Mediterranean	Na
Juncus bufonius L.	Th	Cosmopolitan	Na
Juncaginaceae			
Triglochin barrelieri Loisel	G	Mediterranean	Na
Liliaceae			
Gagea graeca (L.) Irmisch	G	Balkan-Anatolian	Na, Ir
Orchidaceae			
Anacamptis papilionacea (L.) R.M. Bateman, Pridgeon & M.W. Chase	G	Mediterranean-SW Asian	Ir
Ophrys fusca Link in Schrad	G	Mediterranean	KK
Ophrys ferrum-equinum Desf.	G	Balkan-Anatolian	Ir
Ophrys lutea Cav.	G	Mediterranean	AK
Orchis sp.	G		Na
Poaceae			
Achnantherum bromoides (L.) P. Beauv.	H	Mediterranean	Na
Aegilops biuncialis Vis.	Th	Mediterranean-SW Asian	Na
Aeluropus littoralis (Gouan) Parl.	G	Mediterranean-SW Asian	Na
Aira elegantissima Schur	Th	Mediterranean-SW Asian	Na, Ir
Ammophila arenaria (L.) Link	G	Mediterranean	Na
Anthoxanthum odoratum L.	H	Cosmopolitan	Na
Arrhenatherum palaestinum Boiss.	H	E Mediterranean	Na
Avena barata Link in Schrad.	Th	Mediterranean	Na, Sh
Brachypodium distachyon (L.) P. Beauv.	Th	Mediterranean-SW Asian	Na
Briza maxima L.	Th	Subtropical-Tropical	Na, Ir
Bromus hordeaceus L.	Th	Cosmopolitan	Na
Bromus fasciculatus C. Presl	Th	Mediterranean	Na

Bromus intermedius Guss.	Th	Mediterranean	Na, Ke
Bromus madritensis L.	Th	Mediterranean-SW Asian	Na
Bromus rubens L.	Th	Mediterranean-SW Asian	Na
Bromus sterilis L.	Th	Mediterranean-SW Asian	Na
Catapodium marinum (L.) C.E. Hubb.	Th	Mediterranean-Atlantic	Na, AK, Ke, Ir
Catapodium rigidum (L.) C.E. Hubb. in Dony	Th	Mediterranean	Na, AK, Ke, Ir, Sh, Gl
Crypsis aculeata (L.) Aiton	Th	Subtropical-Tropical	Na
Cutandia maritima (L.) Barbey	Th	Mediterranean	Na
Cynodon dactylon (L.) Pers.	G	Cosmopolitan	Na, AK
Cynosurus echinatus L.	Th	Mediterranean	Na
Dactylis glomerata L.	H	Paleotemperate	Na, AK, KK, Ke, Ir, Sh, Gl
Dasypyrum villosum (L.) P. Candargy	Th	Mediterranean-SW Asian	Na
Echinaria capitata (L.) Desf.	Th	Mediterranean	Na, Ir
Elytrigia juncea (L.) Nevski	G	Mediterranean	Na, AK, Sh, Ir
Gastridium sp.	Th		Ke
Hordeum marinum Huds.	Th	Mediterranean-SW Asian	Na
Hordeum murinum L. subsp. *leporinum* (Link) Arcang.	Th	Mediterranean	Na, AK
Hyparrhenia hirta (L.) Stapf in Prain	H	Subtropical-Tropical	Na
Imperata cylindrica (L.) Raeusch.	G	Cosmopolitan	Na
Lagurus ovatus L.	Th	Mediterranean	Na
Lolium rigidum Gaudin subsp. *lepturoides* Sennen & Mauricio	Th	Mediterranean	Na
Melica minuta L.	H	Mediterranean	Na, Ke, Ir
Parapholis incurva (L.) C.E. Hubb.	Th	Mediterranean-Atlantic	Na, Ir
Phleum exaratum Griseb. subsp. *aegaeum* (Vierh.) Doğan	Th	Greek Endemic	Na, AK
Phleum sp.			Sh
Phragmites australis (Cav.) Steud.	G	Cosmopolitan	Na
Piptatherum coerulescens (Desf.) P. Beauv.	H	Mediterranean	Na, Sh
Piptatherum miliaceum (L.) Coss.	Ch	Mediterranean	KK, Sh
Poa bulbosa L.	H	Paleotemperate	Na
Poa infirma Kunth in Humb., Bonpl. & Kunth	Th	Mediterranean	Na
Poa timoleontis Heldr. ex Boiss.	H	E Mediterranean	Na
Polypogon monspeliensis (L.) Desf.	Th	Subtropical-Tropical	Na
Polypogon maritimus Willd.	Th	Mediterranean	Na
Rostraria cristata (L.) Tzvelev	Th	Cosmopolitan	Na
Stipa capensis Thunb.	Th	Mediterranean	Na
Vulpia ciliata Dumort.	Th	Mediterranean-SW Asian	Na
Potamogetonaceae			
Stuckenia pectinata (L.) Börner	A	Cosmopolitan	Na
Ruppiaceae			
Ruppia maritima L.	A	Cosmopolitan	Na
Smilacaceae			
Smilax aspera L.	G	Mediterranean	AK

Appendix II: Localities and dates of relevés

Tab. 2 – Rel. 1: Iraklia, calcareous cliffs, alt. 250 m., 36°49’45’’N, 25°27’17’’E (27.03.2000); Rel. 2: Iraklia, calcareous cliffs, alt. 350 m., 36°49’22’’N, 25°27’05’’E (27.03.2000); Rel. 3: Iraklia, calcareous cliffs, alt. 250 m., pathway to Prophet Ilias towards the open sea, 36°49’42’’N, 25°27’14’’E (27.03.2000); Rel. 4: Keros, calcareous rocky slope, alt. 100 m., 36°53’37’’N, 25°36’47’’E (24.03.2000); Rel. 5: Keros, steep coastal limestone cliffs, alt. 50 m., 36°53’14’’N, 25°36’26’’E (24.03.2000); Rel. 6: Keros, calcareous cliffs opposite of the built-up area of the island Kato Koufonisi, alt. 68 m., 36°53’28’’N, 25°36’32’’E (24.03.2000); Rel. 7: Keros, steep calcareous cliffs, alt. 80 m., 36°52’23’’N, 25°36’29’’E (24.03.2000); Rel. 8: Keros, steep coastal limestone cliffs near the sea, alt. 60 m., 36°53’16’’N, 25°36’25’’E (24.03.2000);

Tab. 3 - Rels. 1, 2: Keros, slope, alt. 20-60 m., 36°53’29-35’’N, 25°36’32-42’’E (24.03.2000); Rel. 3: Keros, slope, alt. 20 m., 36°53’14’’N, 25°36’23’’E (24.03.2000); Rel. 4: Kato Koufonisi, slope, alt. 60 m., 36°54’07’’N, 25°34’16’’E (23.03.2000); Rel. 5: Kato Koufonisi, southeast side of the island, alt. 60 m., 36°54’42’’N, 25°34’46’’E (23.03.2000); Rel. 6: Kato Koufonisi, alt. 60 m., 36°54’56’’N, 25°34’50’’E (23.03.2000); Rel. 7: Kato Koufonisi, alt. 50 m., 36°55’08’’N, 25°35’14’’E (23.03.2000); Rel. 8: Iraklia, pathway to Prophet Ilias, alt. 300 m., 36°49’43’’N, 25°27’11’’E (27.03.2000); Rel. 9: Naxos, near Kalandos, alt. 20 m. (15.05.2000); Rels. 10, 13: Naxos (Panormos), rocky ground near the coast (14.05.2000); Rel. 11: Naxos (Psili ammos), sandy soil, distance from the sea 25 m. (14.05.2000); Rel. 12: Naxos (Volakas), steep rocky coast, distance from the sea 5 m. (14.05.2000); Rel. 14: Naxos (Agali), sandy soil, distance from the sea 30 m. (11.05.2000).

Tab. 4 - Rel. 1: Naxos (Glifada), sand dunes, distance from the sea 40 m. (11.05.2000); Rel. 2: Naxos (Agali), sand dunes, alt. 5 m., distance from the sea 50 m. (11.05.2000); Rel. 3: Naxos (Agios Georgios), sand dunes, alt. 10 m., distance from the sea 70 m. (11.05.2000); Rel. 4: Naxos (Pirgaki), sand dunes, alt. 5 m., distance from the sea 200 m. (11.05.2000); Rels. 5, 9: Naxos, near Apiranthos, steep slopes, alt. 550-700 m. (12.05.2000); Rel. 6: Naxos, on the road from Moutsouna bay to Apiranthos, alt. 500 m., (12.05.2000); Rel. 7: Naxos (Filoti), on the road to monastery Christos Fotodotis, alt. 580 m. (12.05.2000); Rel. 8: Naxos, hillcrest at the south east side of the island adjacent to locality Pirgos himmarou , alt. 490 m. (15.05.2000); Rels. 10, 11: Naxos, on the road to Moutsouna bay, alt. 380-440 m. (12.05.2000).

Tab. 5 - Rel. 1: Naxos (Azalas), at the northeast side of the island, alt. 30 m. (11.05.2000); Rel. 2: Ano Koufonisi, alt. 100 m., 36°56'56''N, 25°36'44''E (21.03.2000); Rel. 3: Ano Koufonisi, slope, alt. 10 m., distance from the sea 100 m., 36°56'11''N, 25°37'06''E (22.03.2000); Rel. 4: Keros, alt. 50 m., 36° 53'25''N, 25°35'30''E (24.03.2000); Rel. 5: Iraklia, alt. 320 m., 36°49'29''N, 25°27'09''E (27.03.2000); Rel. 6: Keros, slope, alt. 40 m., 36° 53'16''N, 25°36'24''E (24.03.2000); Rel. 7: Kato Koufonisi, slope at the south west side of the island, alt. 60 m., 36° 54'10''N, 25°34'18''E (23.03.2000); Rel. 8: Naxos, slope near Apiranthos, alt. 670 m. (12.05.2000); Rel. 9: Naxos, near to the sandy beach of Agios Georgios, alt. 2 m., distance from the sea 100 m. (16.05.2000); Rel. 10: Keros, near to the coastline, alt. 10 m., distance from the sea 30 m., 36° 53'24''N, 25°36'23''E (24.03.2000); Rel. 11: Ano Koufonisi (Finikas), sandy beach, alt. 1 m., distance from the sea 15 m., 36°55'59''N, 25°36'46''E (22.03.2000); Rel. 12: Ano Koufonisi, abandoned field, alt. 80 m., 36°56'57''N, 25°36'47''E (21.03.2000); Rel. 13: Naxos (Volakas), slope, alt. 10 m. (14.05.2000); Rel. 14: Kato Koufonisi, slope near to seaport, alt. 20m., 36° 55'10''N, 25°35'33''E (23.03.2000); Rel. 15: Shinousa, slope, alt. 50 m., 36° 51'37''N, 25°31'42''E (24.03.2000); Rel. 16: Ano Koufonisi (Pori), coastal sands, distance from the sea 30 m. (25.03.2000); Rel. 17: Ano Koufonisi (Pori), foreland, alt. 8 m., distance from the sea 30 m., 36°56'46''N, 25°37'25''E (25.03.2000).

Tab. 6 - Rel. 1: Naxos, on the road from Panormos to Moutsouna, alt. 32 m., (14.05.2000); Rel. 2: Shinousa, abandoned field near to seaport, 36°52'24''N, 25°30'41''E (26.03.2000); Rel. 3: Naxos, on the road from Panormos to Moutsouna, alt. 50 m., (14.05.2000); Rel. 4: Naxos, mountain Zefs, climbing from Danakos village to country church Agia Marina, alt. 660 m., (13.05.2000); Rel. 5: Naxos (Apiranthos), slope, alt. 570 m., (12.05.2000); Rel. 6: Iraklia, slope near Panagia, on patway to Profitis Ilias, alt. 200 m., 36°50'04''N, 25°27'12''E (27.03.2000); Rel. 7: Iraklia, slope, alt. 250 m., 36°49'54''N, 25°27'15''E (27.03.2000); Rel. 8: Ano Koufonisi, slope, alt. 50 m., 36°56'40''N, 25°36'51''E (21.03.2000); Rel. 9: Naxos, small plateau near Moutsouna, alt. 470 m., (15.05.2000); Rel. 10: Naxos, mountain Zefs, climbing from Danakos village to country church Agia Marina, alt. 700 m., (13.05.2000); Rel. 11: Iraklia, on pathway to cave Agios Ioannis, alt. 180 m., 36°50'15''N, 25°26'56''E (27.03.2000); Rel. 12: Iraklia, slope near Panagia, the main settlement of the island, alt. 200 m., 36°49'53''N, 25°27'01''E (27.03.2000); Rel. 13: Naxos, south-western side of Mount Zefs, near the entrance of homonymous cave, alt. 520 m. (13.05.2000); Rel. 14: Shinousa, slope, alt. 10 m., 36°51'39''N, 25°31'26''E (26.03.2000); Rel. 15: Iraklia, slope, 36°50'45''N, 25°27'54''E (25.03.2000); Rel. 16: Kato Koufonisi, near the settlement, alt. 35 m., 36°55'07''N, 25°35'27''E (23.03.2000).

Tab. 7 - Rel. 1: Naxos, ravine near the village Danakos, eastern foothills of the mountain Zefs, alt. 330 m. (13.05.2000); Rel. 2: Naxos, ravine along the road from Moutsouna to Panormos, 50 m. from the sea shore (14.05.2000); Rel. 3: Naxos, ravine, alt. 30 m. (14.05.2000); Rel. 4: Naxos, ravine near the road to Kalandos, alt. 20 m. (15.05.2000); Rel. 5: Naxos, ravine along the road from Panormos to Moutsouna (14.05.2000).

Tab. 8 - Rel. 1: Glaronisi, rocky coast, distance from the sea 25 m., 36° 54'48''N, 25°36'16''E (24.03.2000); Rel. 2: Ano Koufonisi (Pori), coastal rocks, distance from the sea 20 m., alt. 10 m., 36°56'47''N, 25°37'35''E (25.03.2000); Rel. 3: Ano Koufonisi (Pori), coastal rocks, distance from the sea 30 m., alt. 10 m., 36°56'47''N, 25°37'30''E (25.03.2000); Rels. 4, 5: Ano Koufonisi, maritime cliffs near to seaport, distance from the sea 2 m., alt. 5 m., 36°55'46''N, 25°35'52''E (22.03.2000); Rel. 6: Keros, steep coastal cliffs, distance from the sea 5 m., 36°53'14''N, 25°36'20''E (24.03.2000); Rel. 7: Kato koufonisi, maritime cliffs, 36°54'45''N, 25°34'55''E (23.03.2000); Rel. 8: Iraklia, rocky shore, distance from the sea 5 m., 36°51'08''N, 25°28'21''E (25.03.2000); Rels. 9 - 11: Naxos, costal cliffs in Agiassos, distance from the sea 3 m. (16.05.2000); Rel. 12: Shinousa, costal cliffs, distance from the sea 10 m., 36°51'43''N, 25°31'07''E (26.03.2000).

Tab. 9 - Rel. 1: Shinousa, sandy beach near the settlement of the island, alt. 20 m., distance from the sea 12 m., 36°51'54''N, 25°30'58''E (26.03.2000); Rels. 2, 3: Ano Koufonisi, sandy sea shore near to seaport, distance from the sea 6 m., 36°56'11''N, 25°35'30''E (22.03.2000); Rel. 4: Naxos (Pirgaki), coastal sands, distance from the sea 100 m. (11.05.2000).

Tab. 10 - Rels. 1, 5: Iraklia, coastal sands, distance from the sea 40-50 m., 36°51'03''N, 25°28'27''E (25.03.2000); Rel. 2: Ano Koufonisi (Pori), sandy coast, distance from the sea 10 m., 36°56'46''N, 25°37'18''E (25.03.2000); Rels. 3, 4: Ano Koufonisi (Pori), sandy coast, distance from the sea 30-80 m., 36°56'10''N, 25°37'11''E (22.03.2000); Rel. 6: Shinousa, sandy beach near the settlement of the island, distance from the sea 10 m., 36°51'53''N, 25°31'01''E (26.03.2000); Rel. 7: Naxos (Mikri Vigla), sand dunes, distance from the sea 40m. (11.05.2000); Rel. 8: Ano Koufonisi (Finikas), sandy coast, distance from the sea 10 m., 36°50'50''N, 25°36'50''E (22.03.2000); Rel. 9: Naxos (Mikri Vigla), coastal sands, distance from the sea 30 m. (11.05.2000); Rels. 10, 11: Ano Koufonisi (Pori), sand dunes, distance from the sea 10 m., 36-39o56'34''N, 25°37'13''E (22.03.2000); Rels. 12, 14, 17: Naxos (Mikri Vigla), sand dunes, distance from the sea 30-70 m. (11.05.2000); Rel. 13: Naxos (Glifada), sand dunes, distance from the sea 20 m. (11.05.2000); Rel. 15, 16: Naxos (Pirgaki), sand dunes, distance from the sea 25 m. (11.05.2000).

Tab. 11 - Rels. 1, 2: Naxos (Pirgaki), sandy coast, distance from the sea 100-150 m. (16.05.2000); Rel. 3: Iraklia, coastal sands, distance from the sea 35 m., 36°51'03''N, 25°28'29''E (25.03.2000); Rels. 4, 5, 6: Naxos (Pirgaki),

coastal sands, distance from the sea 90-150 m. (11.05.2000).
Tab. 12 - Rels. 1, 2: Naxos, salt marsh vegetation along ditch, behind the sandy beach of Mikri Vigla, 200-250 m from the sea shore (11.05.2000); Rel. 3: Naxos (Mikri Vigla), salt marsh vegetation, 150 m from the sea shore (11.05.2000); Rel. 4: Naxos, offshore salt marsh vegetation in Agiassos, alt. 10 m. (16.05.2000); Rel. 5: Naxos (Kastraki), sandy coast, alt. 20 m., distance from the sea 10 m. (11.05.2000); Rel. 6: Naxos (Glifada), coastal sands, distance from the sea 30 m. (11.05.2000); Rel. 7: Naxos, at sandy edges of a small salt marsh near Agiassos (1.05.2000); Rel. 8: Naxos (Kastraki) coastal sands, distance from the sea 40 m. (11.05.2000);
Tab. 13 - Rels. 1, 2, 4: Naxos (Kalandos), costal wetland (15.05.2000); Rels. 3, 7: Naxos, outfall of local rivulet near the village Pirgaki (16.05.2000); Rel. 5: Naxos (Mikri Vigla), adjacently to salt marsh vegetation (11.05.2000); Rel. 6: Naxos (Kastraki) (11.05.2000).
Tab. 14 - Rels. 1, 3: Naxos (Ajassos), coastal wetland (16.05.2000); Rels. 2, 4: Naxos, outfall of local rivulet near the village Pirgaki (16.05.2000); Rel. 5: Naxos (Kalandos), costal wetland (15.05.2000); Rels. 6, 7: Naxos, dried-up temporary pond, south-east of the village Filoti, alt. 470 (15.05.2000).

Appendix III: Accidental species

Tab. 2 - Rel. 3: Sedum sp. +; Rel. 4: Crucianella sp. 1, Galium sp. 2m; Rel. 6: Euphorbia peplis 1, Scandix australis 1, Bromus sp. r, Anagallis arvensis +; Rel. 8: Aetheorhiza bulbosa +, Anemone coronaria r, Senecio vulgaris r, Clematis cirrhosa 1.
Tab. 3 - Rel. 1: Crocus sp. +, Bupleurum sp. +; Rel. 2: Crocus sp. +, Carex sp. 1; Rel. 3: Gastridium sp. +, Colchicum sp. 2a; Rel. 4: Coronilla scorpioides +, Valantia muralis +; Rel. 5: Valantia muralis 2m; Rel. 6: Piptatherum miliaceum 1; Rel. 7: Piptatherum miliaceum 2m, Rel. 8: Allysum sp. r; Rel. 9: Atractyllis cancellata +, Muscari comosum r, Hymenocarpus circinnatus +, Orchis sp. r, Torilis nodosa +, Aegilops sp. 1, Avena barbata r; Rel. 10: Torilis nodosa +, Hyparrhenia hirta 1, Blackstonia perfoliata 2m, Trifolium grandiflorum +, Lotus ornithopodioides +; Rel. 11: Medicago disciformis +, Hyoseris lucida 1, Bromus madritensis 2m; Rel. 12: Atractyllis cancellata 1, Olea europaea subsp. europaea 2b, Dioscorea communis 1; Rel. 13: Atractyllis cancellata +, Hymenocarpus circinnatus r, Olea europaea subsp. europaea +, Dioscorea communis r, Anthyllis vulneraria r, Sideritis curvidens r, Cyclamen graecum +, Sellaginela denticulata 1, Bromus intermedius 2m, Hymenonema graecum 1, Bituminaria bituminosa +, Stipa capensis +, Galium setaceum +, Plantago cretica +; Rel. 14: Limonium sp. 1.
Tab. 4 - Rel. 1: Vulpia sp. +, Malcolmia flexuosa +; Rel. 2: Reichardia picroides r, Valantia muralis 1, Elytrigia juncea 1; Rel. 3: Reichardia picroides +; Rel. 4: Vulpia sp. +, Bromus madritensis 1, Parietaria cretica 1, Lolium rigidum subsp. lepturoides 2m, Bromus fasciculatus 2b, Erodium malacoides +; Rel. 5: Avena barbata +, Torilis nodosa 1, Dracunculus vulgaris +, Clematis cirrhosa 3, Medicago polymorpha +, Sedum hispanicum r, Vicia sativa subsp. sativa +, Cyclamen hederypholium 1, Aetheorhiza bulbosa 2m, Theligonum cynocrambe 1, Anthemis chia +, Calendula arvensis r, Euphorbia characias 1, Stellaria apetala 1, Carduus pycnocephalus +, Rhagadiolus stellatus +, Cardamine hirsuta +, Crepis sp. +; Rel. 6: Allium subhirsutum 1, Avena barbata +, Clematis cirrhosa 1, Sedum hispanicum +, Vicia sativa subsp. sativa 1, Cyclamen hederypholium 2m, Galium aparine 2m, Acer sempervirens 2b, Veronica cymbalaria 1, Bromus sterilis +, Poa timoleontis 1, Trifolium glomeratum +, Muscari comosum +, Lotus ornithopodioides +, Geranium rotundifolium 1, Coronilla scorpioides +, Cyclamen graecum 2m, Dioscorea communis 1, Umbilicus parviflorus +, Sedum litoreum 1, Cerastium comatum +, Silene cretica 1, Trifolium tomentosum +, Umbilicus horizontalis +, Piptatherum coerulescens 1, Ruta halepensis +, Hedera helix 1, Trifolium infamia-ponertii r, Arrhenatherum palaestinum 2m, Minuartia mediterranea r, Legousia falcata r, Lonicera etrusca 1; Rel. 7: Dracunculus vulgaris +, Medicago polymorpha +, Galium aparine 2m, Acer sempervirens 2a, Veronica cymbalaria +, Anthemis rigida 2m, Orlaya daucoides 1, Rumex tuberosus 1, Geranium lucidum 2m, Fumaria kralikii +, Poa bulbosa 1, Smyrnium perfoliatum subsp. rotundifolium r, Anthoxanthum odoratum +; Rel. 8: Convolvulus althaeoides r, Avena barbata 1, Bromus sterilis +, Orlaya daucoides +, Malva parviflora r, Achnantherum bromoides 1, Medicago orbicularis r, Scandix pectin-veneris r, Picnomon acarna +, Euphorbia peplis r, Echinaria capitata +, Olea europaea subsp. europaea +; Rel. 9: Convolvulus althaeoides 1, Poa timoleontis 2m, Trifolium glomeratum 1, Anthemis rigida r, Anthyllis vulneraria 1, Linum triginum +, Gagea graeca +, Scorpiurus muricatus r, Astragallus spruneri r, Crucianella angustifolia r, Vicia cretica 2m, Eryngium campestre +, Rostraria cristata r; Rel. 10: Allium subhirsutum 1, Avena barbata 1, Torilis nodosa 1, Muscari comosum r, Malva parviflora +, Achnantherum bromoides 2m, Medicago orbicularis +, Anthyllis vulneraria 1, Linum triginum 1, Bupleurum gracile r, Leontodon tuberosus r, Vulpia ciliata +, Convolvulus oleifolius 2m, Bromus hordeaceus 1, Nigella arvensis 1, Erodium cicutarium r, Aegilops biuncialis 1, Pallenis spinosa r, Sideritis curvidens 1, Sellaginela denticulata 1; Rel. 11: Valantia muralis 1, Bromus madritensis 1, Allium subhirsutum +, Convolvulus althaeoides 1, Avena barbata +, Aetheorhiza bulbosa +, Bupleurum gracile 1, Leontodon tuberosus +, Vulpia ciliata 1, Thesium bergeri 1, Osyris alba +, Carex flacca subsp. serrulata +, Polygala venulosa 1, Coronilla scorpioides +.
Tab. 5 - Rel. 2: Asphodelus ramosus subsp. ramosus +, Polygala venulosa 1, Thesium bergeri 1, Carex flacca subsp. serrulata 2m; Rel. 3: Asphodelus ramosus subsp. ramosus r, Thesium bergeri r, Carex flacca subsp. serrulata +; Rel. 5: Asphodelus ramosus subsp. ramosus +; Rel. 6: Taraxacum sp. 1, Bromus sp. 2m; Rel. 7: Polygala monspeliaca r, Cuscuta sp. 1, Paronychia macrosepala 1, Anemone coronaria 1, Ophrys fusca +, Bupleurum sp. r; Rel. 8: Anthemis rigida 2m, Lagoecia cuminoides 1, Convolvulus althaeoides 1, Avena barbata 1, Vicia cretica 1, Bromus intermedius 1, Sisymbrium orientale 1, Trifolium tomentosum 1, Anagallis arvensis +, Lolium rigidum subsp. lepturoides +, Torilis nodosa +, Rostraria cristata r, Hymenocarpus circinatus +, Scandix pectin-veneris +, Rumex tuberosus 1, Trifolium glomeratum 1, Pyrus amygdaliformis 2m, Euphorbia characias +, Orlaya daucoides r, Geranium lucidum +, Plantago cretica 2m, Filago eriocephala +, Alkanna tinctoria r, Ornithopus compressus +, Eryngium campestre 1, Senecio vulgaris

r, Silene cretica +, Gagea graeca r, Trifolium nigrescens +; Rel. 9: Lagoecia cuminoides 1, Convolvulus althaeoides r, Daucus guttatus 1, Hyparrhenia hirta 1, Calicotome villosa +, Piptatherum coerulescens +; Rel. 10: Anagallis arvensis 1, Euphorbia peplis 1, Valantia muralis 1, Romulea bulbocodium 2a, Erodium cicutarium 2m; Rel. 11: Reichardia picroides 1, Valantia muralis +; Rel. 12: Pallenis spinosa 1, Asphodelus ramosus subsp. ramosus r, Polygala venulosa +; Rel. 13: Bromus intermedius 1, Hymenocarpus circinatus r, Bromus madritensis +, Sherardia arvensis r, Daucus guttatus +, Hyparrhenia hirta 1, Blackstonia perfoliata +, Galium setaceum 1; Rel. 14: Paronychia macrosepala +, Valantia muralis 2m, Asphodelus ramosus subsp. ramosus r, Bituminaria bituminosa 1; Rel. 15: Sherardia arvensis 2m, Asphodelus ramosus subsp. ramosus 1, Pallenis spinosa +, Muscari sp. +; Rel. 16: Cynodon dactylon 1, Elytrigia juncea 1, Eryngium maritimum 1; Rel. 17: Reichardia picroides +, Romulea bulbocodium 2a, Malcolmia sp. +.

Tab. 6 - Rel. 1: Dianthus cinnamoneus subsp.cinnamoneus 1, Melica minuta +, Achnantherum bromoides +, Crucianella latifolia +; Rel 2: Valantia muralis +, Calendula arvensis +, Medicago monspeliaca +, Geranium molle +, Pallenis spinosa 1, Micromeria nervosa +, Piptatherum miliaceum 1; Rel. 3: Hymenocarpus circinatus r, Anthyllis vulneraria +, Dianthus cinnamoneus subsp.cinnamoneus +, Pallenis spinosa r, Aegilops biuncialis 1, Filago pygmaea +; Rel. 4: Sisymbrium orientale 2m, Bromus sterilis 2m, Pyrus amygdaliformis 2a, Bromus madritensis 2m; Rel. 5: Trifolium tomentosum +, Scandix pecten-veneris r, Anthyllis vulneraria 1, Thesium bergeri 1, Trifolium nigrescens +, Trifolium grandiflorum +, Medicago polymorpha +, Trifolium physodes 1, Euphorbia characias 2m, Orlaya daucoides 1, Geranium lucidum +, Vicia villosa 1, Hypericum perfoliatum 2m, Thapsia garcanica +, Vicia sativa subsp. sativa 1, Sisymbrium officinale 1, Dasypyrum villosum +, Medicago murex 1, Linum triginum 2m; Rel. 6: Muscari commutatum +; Rel. 8: Valantia muralis r, Sisymbrium orientale r, Muscari commutatum +, Senecio vulgaris r, Calendula arvensis r, Geranium molle r, Pallenis spinosa 1, Hordeum murinum subsp. leporinum +, Polygala monspeliaca r, Astragallus hamosus +, Helianthemum apenninum +, Adonis microcarpa 2m, Erodium cicutarium +, Glebionis coronata +, Parietaria lusitanica r, Malva cretica 2m, Capsella bursa-pastoris 2m; Rel. 9: Trifolium tomentosum r, Trifolium nigrescens r, Medicago monspeliaca +, Plantago weldenii +, Crepis multiflora 2m, Cerastium comatum +, Trifolium suffocatum r, Filago cratensis +; Rel. 10: Sisymbrium orientale 1, Trifolium tomentosum +, Trifolium glomeratum +, Medicago polymorpha r, Trifolium physodes +, Hypericum perforatum +, Anthoxanthum odoratum 2m, Phelibanche ramosa r; Rel. 11: Muscari commutatum +, Senecio vulgaris +, Gagea graeca +, Geranium molle 1, Geranium purpureum +, Buglossoides arvensis r; Rel. 12: Helichrysum italicum r, Medicago sp. +, Convolvulus sp. 2m, Echinaria capitata +; Rel. 13: Trifolium tomentosum +, Scandix pecten-veneris +, Plantago weldenii +, Trifolium grandiflorum +, Bromus sterilis +, Hordeum murinum subsp. leporinum 1, Bromus madritensis 2m, Geranium purpureum r, Dracunculus vulgaris +, Picnomon acarna +, Carduus pycnocephalus +, Plantago cretica r, Valantia aprica +, Medicago praecox r, Melica minuta 2m, Legousia hybrida +; Rel. 14: Olea europaea subsp. europaea 2a; Rel. 15: Muscari commutatum 1, Gagea graeca +, Anemone coronaria +, Buglossoides arvensis r, Bellardia latifolia +, Scaligeria napiformis +, Anacamptis papilionacea r, Ophrys ferrum-equinum r; Rel. 16: Anacamptis papilionacea +, Olea europaea subsp. europaea 1.

Tab. 7: Rel. 1: Scrophularia peregrina 1, Hedera helix +, Asplenium ceterach +, Pteridium aquilinum +, Arisarum vulgare 1; Rel. 3: Galium aparine 1, Rhagadiolus stellatus 1, Allium subhirsutum r, Crepis multiflora +, Picris pauciflora +, Picnomon acarna r; Rel. 5: Daucus guttatus 2m, Bryonia cretica 2b, Hirschfeldia incana 1, Filago aegea subsp. aristata 1, Crepis foetida 1, Vicia cretica +.

Tab. 8 - Rel. 1: Bellium minutum 1; Rel. 2: Anagallis arvensis r, Lotus edulis +, Euphorbia peplis +, Cuscuta sp. 1, Aetheorhiza bulbosa 2b, Medicago littoralis r; Rel. 3: Arthrocnemum macrostachyum 1, Valantia hispida r; Rel. 5: Silene colorata r, Echium arenarium r, Trifolium uniflorum 1, Romulea bulbocodium r, Plantago lagopus r; rel. 6: Arenaria aegea 1, Muscari sp. 1, Phagnalon rupestre subsp. graecum +; Rel. 8: Silene colorata r, Anagallis arvensis r, Parapholis incurva 1; Rel. 10: Paronychia capitata 1; Rel. 11: Bupleurum semicompositum r; Rel. 12: Echium arenarium 1, Lotus edulis +, Phleum sp. +, Trigonella corniculata +, Crepis multiflora r, Urospermum picroides +.

Tab. 10 - Rel. 2: Cynodon dactylon 3, Reichardia picroides r, Cichorium spinosum +; Rel. 6: Orobanche sp. +, Echium arenarium 1; Rel. 7: Orobanche sp. r, Paronychia argentea 1, Plantago afra 2m, Echium angustifolium 1; Rel. 8: Cynodon dactylon 4; Rel. 9: Salsola tragus r, Senecio vernalis +; Rel. 10: Cynodon dactylon 2m; Rel. 12: Silene sartorii 1, Senecio vernalis r, Crepis multiflora r, Aeluropus littoralis +, Reichardia picroides r; Rel. 14: Silene sartorii 1, Senecio vernalis r, Avena barbata +; Rel. 15: Imperata cylindrica 2b; Rel. 17: Senecio vernalis +.

Tab. 11: Rel. 2: Erodium cicutarium r, Anagallis arvensis r; Rel. 3: Cakile maritima r; Rel. 5: Lotus cytisoides 1, Paronychia argentea r; Rel. 6: Polygonum maritimum +, Euphorbia peplis +, Salsola tragus +.

Tab. 13: Rel. 4: Aetheorhiza bulbosa +; Rel. 5: Phagnalon saxatile r, Hyoseris scabra +, Frankenia hirsuta 2m, Reichardia picroides +, Catapodium marinum +; Rel. 6: Salsola tragus 2m, Elytrigia juncea 2b, Phleum exaratum subsp. aegeum 1, Lolium rigidum 1; Rel. 7: Atriplex prostrata 1, Polypogon maritimus 1, Tamarix sp. +.