Introduction

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The Dadia–Lefkimi–Soufli Forest National Park (DNP) is situated between longitudes 26°01’ – 26°19’ E and latitudes 40°58’ – 41°15’ N in the Regional Department (Region) of East Macedonia-Thrace, in northeastern Greece. It is located in the centre of the “Nomós” Evros, i.e. one of the 54 administrative units into which Greece is divided – called “prefectures” throughout this book. It is the most easterly of the five prefectures which constitute the Regional Department. Greek Thrace consists of three prefectures, Xanthi, Rhodopi and Evros. The eastern boundary of the Evros prefecture runs along the Evros river and coincides with the state boundaries between Greece and Turkey. The borders of three states, Bulgaria, Turkey and Greece, meet in the north-east (Fig. 1).

The centre of the area (Gibraina hill) is 36 km from the nearest sea coast and 38 km from the Evros Delta. It is also 150 km ESE of the highest peak of the Rhodope Mountains (Pelerik 2192 m asl), in Bulgaria. Access to the village of Dadia, almost in the centre of the park, is along a 6.5 km local road off the national road No. 51 (Alexandroupolis – Oresteiada). Via these two roads the Dadia village is 58 km from the “Demokritos” airport of Alexandroupolis and 13 km from Soufli, the nearest large town to the DNP, which can also be accessed by train. As yet, there are no National Park headquarters, but there is a visitor centre just outside Dadia village.

The DNP is part of the extreme south-eastern hills of the Eastern Rhodope Mountains which make up the south-eastern part of the c. 6000 km² Rila-Rhodope mountain chain, c. 4170 km² of which belong to Bulgaria and 1830 km² to Greece (Petrov 2004). The average altitude of the eastern Rhodope is about 350 m asl with the highest peak (Mt Papikion in Greece) reaching 1483 m. DNP’s altitudinal range is between 10 and 654 m asl and, compared with the c. 500 m average altitude of Greece, the DNP can be classified as sub-mountainous. Most of its highest points are in the south and south-western central part and are: Kapsalo/Stavros (620/602 m), Mavri Korfi (522 m), Gerakina or Intsiali (495 m), Tavros or Bouga Sivri (480 m), Gibraina (448 m) and Baltzas (354 m). However, the highest point of the park (Ada Tepe, 654 m), is located at its north-western borders (Fig. 2). This hilly area is bordered to the S, E and SE by the flat valleys of Thrace, the Evros river plains and the huge, smoothly undulating lowland area of Turkish Thrace.

The dominant topographical feature of the park is a network of low hills and chains of hills, generally of moderate slope, separated by valleys containing temporary streams. There are five major temporary torrential streams and these flow mainly from WNW to ESE to the River Evros. These are, from south to north, the Megalo Rema (“Réma” = stream in Greek), the Rema of Provatónas, the Rema of lýra (which at higher elevations is called Lykertziótko), the Diavolórema (Devil’s stream), which in its lower reaches is called Mangázi, the Kamilopótamos (potamós = river in Greek) and Kazáni, the smallest stream (Fig. 2). Their catchment areas range from 21 to 290 km² with mean annual discharges ranging from 131 to 480 m³ day⁻¹ (Maris and Vasileiou, this volume). Although water flow ceases entirely, or is greatly reduced, during the summer months, most of these streams retain pools of standing water at intervals along their courses.

Geologically, the DNP is divided into two major zones by a NE–SW line (see Fig. 4 in Skias, this volume). The northern zone is dominated by Tertiary ophiolite complexes (amphibolites and serpentinites, with patches of mafic and ultramafic rocks). The southern zone, roughly south of Dadia village, is mainly of Paleogene volcanic and sedimentary rocks, i.e. flysch formations of the Eocene (56–34 Ma) and volcanic rocks (Dimadis and Zachos 1986, Piper and Pe-piper 2002). The vol-
The geographical position of the Dadia–Lefkimi–Soufli Forest National Park (DNP) in Greek Thrace, north-eastern Greece.
Fig. 2. Geomorphology map of the Dadia–Lefkimi–Soufli Forest National Park (DNP).
canic rocks are rhyolites and ignimbrites which represent lava flows, domes, dykes and abundant pyroclastics connected to fault-controlled basins, such as the Feres–Dadia–Soufli basin. These were formed under tension tectonics and are mainly related to volcanic (and tectonic) activity dating back to the Oligocene (33.4–25.4 Ma) or earlier and to the Early Miocene (22.0–19.5 Ma) (Christofides et al. 2004, Skias, this volume).

The northern ophiolite zone is a back-arc basin (molasse) which has undergone intense erosion and is characterised by a smooth relief, almost devoid of rocky outcrops. In contrast, the southern volcanic zone exhibits a very rugged topography of rocky outcrops mainly at the summits of its numerous hills (Fig. 3).

The climate is mild Mediterranean (Meso-Mediterranean), but its Mediterranean character is significantly modified by prevailing northerly winds which gives a regionally harsh winter climate with continental affinities. Meteorological data for 1964–1998 from the weather stations at Lefkimi (150 m asl, in the southern part of the park), Soufli (15 m asl, at the north-eastern edge of the park) and Mikro Dereio (250 m asl, just to the north-west of the park), show a mean annual precipitation of 732 mm with a maximum in December and a minimum in August, and a clear decreasing trend for the period (Petelas et al. 2004). The number of days with snow cover varied from 8.7 to 13.6 (mainly in January) and the mean annual temperature from 13.7 to 15 °C. The mean monthly minimum of the coldest month (January) was around 0 °C (Adamakopoulos et al. 1995, Korakis and Gerasimidis, this volume).

The forest vegetation has been shaped by the interaction of the local climate, topography, soil conditions, the area’s location close to the River Evros and anthropogenic impacts. The prevailing vegetation formation belongs to the sub-Mediterranean vegetation zone (Dafis 1973) and is characterized by thermophilous sub-continental deciduous oaks. These have undergone intense degradation and as a result pine forests, either pure or mixed with oak, occur in the most infertile parts (Fig. 4). Nine main habitat types were identified in the area (Korakis and Gerasimidis, this volume; Fig. 5), among which one type of grassland, Black Pine *Pinus nigra* stands and Common Alder *Alnus glutinosa* galleries, are considered as priority habitats for conservation in the European Union countries under the Directive 92/34 EEC (the Habitats Directive). Analysis of high resolution satellite photos taken in 2001 showed that 74.4% of the DNP is woodland (defined as 40–100% covered with woody plants). Forest clearings, bare ground, grazing land and partly wooded areas (defined as less than 40% covered with woody plants) constitute 9.2% (3,986 ha), while arable occupies 16.4% (Fig. 4; Poirazidis et al. in press).

Pine forests predominate in the central and eastern parts (18.6% of the area), with broadleaf, mixed forests and maquis covering smaller areas. The pine woodland is dominated by Turkish Pine *Pinus halepensis brutia*,...
The rugged relief of the volcanic central and southern part of the Dadia–Lefkimi–Soufli Forest National Park (DNP) is clearly manifested compared with the smooth relief of the ophiolithic northern part.
while Black Pine is found in smaller, rarely pure stands. Conifers occur on nutrient-poor, acid soils on igneous substrates, while sparse-canopy deciduous forest is represented on ultra-basic soils in the area’s central parts. The presence of extensive forests of mature pine at such low altitudes is unique in Greece, because in similar sites pine forests have been destroyed or degraded by fire, housing expansion or other anthropogenic causes.

Pure oak woodland (37.6% of the area), which suffered heavy logging in the past, consists mainly of three species of oak (Quercus frainetto, Q. cerris, Q. pubescens) and prevails in the northern and south-western parts of the area. Mixed pine-oak woodland (c. 41% of the area) occurs in intermediate conditions and is formed by the gradual invasion of oak into the conifer understorey. Sclerophyllous shrubs of the Quercion illicis association (c. 3% of the area), with Arbutus adrachne, Phillyrea latifolia, Erica arborea, Cistus creticus and others, occur mainly in the south-west (Poirazidis et al. in press). Of the riparian vegetation, Common Alder is dominant in many places, while willows Salix spp., Black Poplar Populus nigra and tamarisks Tamarix spp. dominate in others. The rest of the area is grassland, grazing land, rocky outcrops, fields and villages (Fig. 4). At higher elevations near the park, there are also beech Fagus orientalis and oak Q. dalechampii forests.

The mosaic of habitats and low level human exploitation of its natural resources have certainly contributed to the high biodiversity found in DNP. On the other hand, with respect to its vegetation cover, the DNP is at the easternmost edge of a huge expanse of forest, which mainly occupies the Rhodope mountain range surrounded by a wide zone of steppe vegetation, treeless grazing land and arable cultivations. For hundreds of kilometres eastwards, across all of Turkish Thrace right up to the Bosporus, major forested areas are absent (see Fig. 4, on p. 233 in this volume).

There are very few records of human habitation in the area from Paleolithic times, i.e. 10,000 – 7,000 BC (Kougkoulos and Gouridis 1997, National Research Foundation 2000). In early antiquity, the area was inhabited by Thracians who probably settled there around the 11th century BC or perhaps even earlier (National Research Foundation 2000, Gouridis 2006). It is not known which Thracian tribe(s) settled in the area but the central Evros region was probably ruled by the most important and powerful Thracian tribe, the Odryssae. However, the park might also have been inhabited by the Vennoi, the Korpiloi, the Vessoi, or the Ziranioi (Gouridis 2006).

During the Early Iron Age (1050–650 BC), Thracians continued to live as their Neolithic predecessors had done, in small hilltop settlements, which gradually had to be enclosed and fortified (Kougkoulos and Gouridis 1997, Aslanis 2000). This period was also characterized by megalithic monuments such as cromlechs and menhirs. After the Greek colonisation of the Thracian coast between the 7th and 6th century BC, Thracians were influenced culturally by the Greeks, the Scythians and later by the Persians (513–465 BC). Around 340 BC Philipp II of Macedonia conquered Thrace and later the Gauls invaded and established their reign in the 3rd century BC. Romans took control of Thrace from 168 AD, but it was only after 46 AD that it was proclaimed a Roman province. Strategic, administrative and economic needs led Roman emperors to establish, at the beginning of the 2nd century AD, some important cities, such as Plotinopolis, Adrianopolis and Traianoupolis (Fig. 6).
During the Byzantine period (330–1453 AD) Thrace, being the hinterland of Constantinople, served as its breadbasket and its bulwark (Ousterhout and Bakirtzis 2007). Because of its geographical position the land surrounding the capital suffered waves of barbarian invasions between 4 AD and 1122 from Goths, Huns, Slavs, Avars, Bulgarians, Pechenegs, Cumans, Uzes, Normans, Tartars (National Research Foundation 2000). Thrace was conquered by the Ottomans between 1357 and 1361 (Gouridis 2006) and during their regime the area was repeatedly colonized voluntarily or forcibly both by Asiatic populations and Christian refugees.

Fig. 5. Distribution of habitat types in the Dadia–Lefkimi–Soufli Forest National Park (after Korakis and Gerasimidis, this volume). According to the CORINE classification: 32.131 = juniperus oxycedrus arborescent matorral, 34.31 = Subcontinental steppic grasslands, 34.532 = Pseudo-steppe with grasses and annuals of the Thero-Brachypodietea, 41.76 = Thermophilous oak woods of Eastern Mediterranean and the Balkans, 32.313 = Eastern Mediterranean high maquis, 42.66 = (Sub-)Mediterranean pine forests with endemic Black Pines, 42.85 = Mediterranean pine forests with endemic Mesogean Pines, 44.514 = Greek Alder galleries, 44.1412 = Salix alba and Populus alba galleries.
from other, more troubled areas. Most of the villages and towns existing today were established before the 17th century (Gouridis 2006). He mentions that, according to early Ottoman archives (1454–1455), some villages in the area belonged to “doğançı” or falconers – persons occupied with raising and training falcons for hunting purposes. There was a specific service/ministry devoted to falconry in the Ottoman administration with the main local office based in Feres. The surrounding countryside was considered both in Byzantium and in the Ottoman to be excellent hunting ground (Gouridis 2006).

The most important local event of the 19th century was the development of a silk (sericulture) industry. Soufli played a major role in its development, as well as, after a certain period, in the elaboration of silk. The advent of the Thessaloniki – Dedegăç (today Alexandroupolis) and Edirne – Dedegăç railways, as well as the establishment of the modern international border along the River Evros (in 1923), dramatically altered the economy of the area.

In the last quarter of the 19th and the first decades of the 20th century, its Greek, Turkish and Bulgarian populations were at the centre of uprisings, conflicts and warfare associated with the gradual creation of Balkan ethnic states after the breakup of the Ottoman Empire. The Balkan Wars (1912–1913) and World War I (1914–1918) caused upheaval in the established social and “ethnic” status quo of the region which for centuries had been under the unifying power of the Ottoman Empire. The ensuing turmoil forced thousands of people to leave their ancestral homes which resulted in a loss of cultural continuity in the area. In 1920 Western (presently Greek) and Eastern (presently Turkish) Thrace was rendered to the Greek State according to the terms of the Sèvres Convention. Early in 1923 Greece and Turkey signed the “Convention Concerning the Exchange of Greek and Turkish Populations” in Lausanne. This brought about the evacuation of Eastern Thrace (Turkish Thrace) by the Greek populations leaving the Evros region a border area of Greece with Turkey. Since then the Dadia–Lefkimi–Soufli area has been part of the Prefecture of Evros and the District of Soufli.

During World War II, most of the prefecture of Evros was under the German occupation, while the rest of Thrace and Eastern Macedonia was occupied by the Bulgarians. The Civil War (1946–1949) that followed
The World War II liberation added more wounds to the already exhausted Thrace (Gouridis 2006), which included the park and its villages (Dadia, Lefkimi), which had been among the main theatres of the war.

The present administration of the DNP area is shared between the municipalities of Soufli (c. 63%), Tychero (c. 34%), Feres (2.1%) and Orfeas (0.9%) (Fig. 7). Only three inhabited settlements lie within the park (Dadia, Lefkimi and Giannouli, total population c.1400), while six more, with a total population of 5,700, are situated just outside its boundaries (Soufli, Kornofolia, Lykofi, Lyra and Provatonas to the east and Kotronia to the west). Compared with other areas within a similar altitudinal range this is the most thinly populated area in Greece, with a population density of c. 3.3 inhabitants km\(^{-2}\).

Today the economy is based upon the primary (agriculture, stock raising and forestry) and the tertiary sector (services). Employment trends of the two municipalities that share the DNP are characterised by high but continuously decreasing employment in the primary sector, a very small secondary sector and a very significant – compared to the other sectors – proportion of people employed in services (tourism included) and a high level of unemployment (Liarikos, this volume). Most cultivated land is allocated to annual crops (83%) and a very low percentage to orchards and vineyards (Liarikos, this volume).

Fig. 7. Distribution of municipal areas in the Dadia–Lefkimi–Soufli Forest National Park.
A number of early and recent studies (Helmer and Scholte 1985, Adamakopoulos et al. 1995, Ivanova 2000, Kati and Willems 2001, Grill and Cleary 2003, Kati et al. 2003, Papadatou 2006, Korakis and Gerasimidis 2006, Korakis et al. 2006, 2009) have provided evidence for the area’s rich biodiversity: ca 360–400 species of plants, including 25 orchids (Kati et al. 2000), 104 butterflies (L. Pamperis pers. comm.) making it one of the 10 prime butterfly areas in Greece (van Swaay and Warren 2003), 12–13 amphibians, 29 reptiles, 60–65 mammals, and more than 200 birds (see Appendix A). However, the designation as a Nature Reserve in 1980 was mainly due to the diversity of raptorial birds it hosts. Since the late 1970s, 36 out of the 38 diurnal European raptors have been observed, 24 have bred and 16–20 still breed. Raptors are of particular interest, not only because of the high number of species found in this relatively small area, but also because of the large populations of some of them. The Lesser Spotted Eagle *Aquila pomarina* and the Short-toed Eagle *Circaetus gallicus* have larger populations than in any other part of Greece, while the Black Vulture *Aegypius monachus* population constitutes the last breeding concentration in the Balkan Peninsula. A large population of Black Stork *Ciconia nigra* is also present.

The herpetofauna is very rich in species, with reptile densities among the highest in Europe (Helmer and Scholte 1985). Twenty-four of the area’s 60–65 mammals are bats (Ivanova 2000, Papadatou 2006), most of which are listed as ‘Endangered’ according to the Red Data Book of Threatened Vertebrates in Greece (Karandinos and Legakis 1992). The geographical position of the Evros Prefecture, close to the physical boundaries between Europe and Asia, means that some species here are at their western distribution limits or are close to them. Examples are the Ottoman Viper *Montivipera xanthina*, the Snake-eyed Lizard *Ophisops elegans*, the Isabelline Wheatear *Oenanthe isabellina* and the Masked Shrike *Lanius nubicus*. Some other species, which are mainly of central European distribution, are here at the southernmost edge of their ranges, e.g. the Fire-bellied Toad *Bombina bombina*. The mainly Balkan and Caucasian Meadow Lizard *Lacerta praticola* also has its southernmost limit here (Adamakopoulos et al. 1995, Gasc et al. 1999).

The most frequent life-form among plants is Hemi-cryptophytes, which are evidence of the area’s pronounced sub-Mediterranean character (Korakis et al., this volume), and among the life-history features of the flora, perennial herbs predominate with 60% of the total, followed by annual herbs and woody perennials, i.e. shrubs and trees (Korakis et al., this volume). Local endemics of interest are *Minuartia greuteriana* and *Onosma kittanae* as well as the geographically restricted *Salix xanthicola*. Another remarkable species is *Eriolobus trilobatus*, the only species of its monotypic genus and one of the rarest trees in Greece and Bulgaria (Korakis et al. 2006, 2009).

Within the DNP, only the cultivated fields are privately owned property while most of its extensive area is public. Forest management is the responsibility of the Forest Service and specifically the Forest Service Department of Soufli.

An area of c. 42,400 ha was declared a Nature Reserve in 1980 and in 2006, 42,800 ha were declared the Dadia–Lefkimi–Soufli Forest National Park. Of these, 7800 ha are included in the strict protection zone (Zone A) and the rest in the buffer zone (Zone B), where sub-zones of forest exploitation (B1), agricultural land (B2) and grazing land (B3) have been identified (Fig. 8). Before the designation as a National Park, a Management Fig. 8. Protection zoning of the Dadia–Lefkimi–Soufli Forest National Park (DNP). A denotes the two strictly protected zones, B denotes various areas of the buffer zone.
Agency, a board representing local and national stakeholders, had already been established in 2003.

The boundary of the DNP coincides almost entirely with the boundaries of two natural areas protected according to the EU legislation, which are part of the Greek Natura 2000 network. These are the Site of Community Interest (SCI) called “Vouna Evrou” (coded GR1110005) and the Special Protection Area (SPA) called “Dasos Dadias–Soufli” (coded GR1110002, Fig. 9). In the immediate vicinity of the DNP there are two more SCIs: Treis Vrysses (GR1110003), Delta Evrou and Dytikos Vrahionas (GR1110007) and three SPAs: Notio Dasiko Symplegma Evrou (GR1110009), Delta Evrou (GR1110006), Oreinos Evros – Koilada Dereiou (GR1110010, Fig. 9). SCIs are established according to EC Directive 92/43, the Habitats Directive and SPAs according to EC Directive 79/409, the Birds Directive.

Fig. 9. The distribution of various SCIs and SPAs in the vicinity of the Dadia–Lefkimi–Soufli Forest National Park (SPA: GR1110002, SCI: GR1110005).

References
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