

## Current distribution and population status of wild boar (*Sus scrofa* L.) in Greece

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**Abstract** – This is the first attempt to estimate wild boar (*Sus scrofa* L.) population density and distribution in Greece. The study took place in 2004, in all 38 Greek counties of the mainland, as well as in the larger forested Greek islands: Crete, Rodos, Samos, Lesvos, Limnos, Thasos, Corfu, Kefalonia and Zakynthos. It was observed that the species was present in every county in continental Greece, with the exception of the two counties Attica and Evia. Attica, which includes the capital city of Athens, is densely inhabited not allowing much space for wildlife. Evian is an island connected to the mainland with a bridge. Wild boar can be found in an area around 19,495 km<sup>2</sup>, which is about 14% of the country. The mean distribution altitude reaches 686 ± 266 m. The average population number was estimated at 19,033 (0.98 ± 0, 21 ind/km<sup>2</sup>) individuals with maximum population level 23,030 animals, and a minimum of 16,536. The highest mean density was observed in the prefecture of Sterea Hellas (1.26 ind/km<sup>2</sup>) and the lowest in the prefecture of Thrace (0.89 ind/km<sup>2</sup>). The maximum density was found in Sterea Hellas (3.14 ind/km<sup>2</sup>) and the minimum density in Thrace (0.13 ind/km<sup>2</sup>). The above results are expected to provide valuable information for the management of wild boar in Greece.

**questionnaires / demography / mean density / habitat / management**

**Kivonat** – A vaddisznó (*Sus scrofa* L.) populációjának jelenlegi eloszlása és státusza Görögországban. Ez az első kísérlet a vaddisznó-populációk sűrűségének és elterjedésének becslésére Görögországban. A felmérés 2004-ben a görög szárazföld mind a 38 megyéjére, valamint a legerdősültebb görög szigetekre – Kréta, Ródosz, Számosz, Lészvosz, Límnosz, Thászosz, Korfu, Kefalinia és Zákynthosz – terjedt ki. A faj jelen volt a kontinentális Görögország összes megyéjében, kivéve Attikát és Éviát. Attika, ami magában foglalja Athént, a fővárost, nagyon sűrűn lakott, így nem biztosít élőhelyet a vadnak, Évia-szigete pedig egy híddal kapcsolódik a kontinenshez. A vaddisznó hozzávetőlegesen 19 495 km<sup>2</sup>-en fordul elő, amely az országnak kb. 14%-a, elterjedésének átlagos tengerszint feletti magassága 686±266m. Az átlagos becsült populációnagyság 9 033 (0,98 ± 0,21 egyed/km<sup>2</sup>) egyed, a becslés maximuma 23 030 egyed, minimuma 16 536 egyed. A legnagyobb átlagos sűrűség Szterea Hellász megyében (1,26 egyed/km<sup>2</sup>) volt, a legalacsonyabb pedig Trákia megyében (0,89 egyed/km<sup>2</sup>). A maximális sűrűséget Sterea Hellász megyéjében (3,14 egyed/km<sup>2</sup>), a minimumot Trákia megyében (0,13 egyed/km<sup>2</sup>) mutattuk ki. A fenti eredmények értékes információt nyújtanak a vaddisznó-gazdálkodáshoz Görögországban.

**kérdőív / demográfia / átlagos sűrűség / élőhely / gazdálkodás**

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## 1 INTRODUCTION

Wild boar has the largest distribution of any wild ungulate worldwide. Since the 1990s wild boar have gone through a population explosion, which increased their range and their density where they were already common (Sáez-Royuela - Tellería 1986, Marsan et al. 1995, Ueda – Kanzaki 2005, Tsachalidis- Hadjisterkotis 2008). Based on hunting bag estimates, wild boar populations in Greece (contrary to many other parts of the world) are stable (Thomaides et al. 2001), but actual data of the wild boar population in Greece are still missing (Tsachalidis – Hadjisterkotis 2008). Wild boar in Greece is native and a popular big game species, with a wide distribution all over continental Greece. In 1988, it was successfully reintroduced in the region of Peloponnesus, from where it was driven to extinction in 1830 (Tsachalidis – Konstantopoulos 2004, Tsachalidis 2008).

The wild boar hunting is allowed from 15/09/... to 20/01/... about four months and only for 3 times per week (Wednesday, Saturday and Sunday). (Tsachalidis 2008a).

Studies on wild boar in Greece includes ecology and management (Sfougaris et al. 1999) hunting management (Karampatzakis 2006, Tsachalidis 2008) hunter behavior, hunter characteristics and socioeconomic trends (Tsachalidis- Hadjisterkotis 2008, Tsachalidis et al. 2008a), wild boar diet (Tsachalidis et al. 2004, Papageorgiou et al. 2006, Paralikidis et al. 2006) and wild boar population status (Tsachalidis – Konstantopoulos 2004, Tsachalidis – Konstantopoulos 2005, Tsachalidis et al. 2008b). However, there are no studies on distribution, habitat selection and population density, necessary for the proper management and conservation of this species. Herein, we report for the first time the distribution, habitat selection and population density of wild boar in Greece.

## 2 MATERIALS AND METHODS

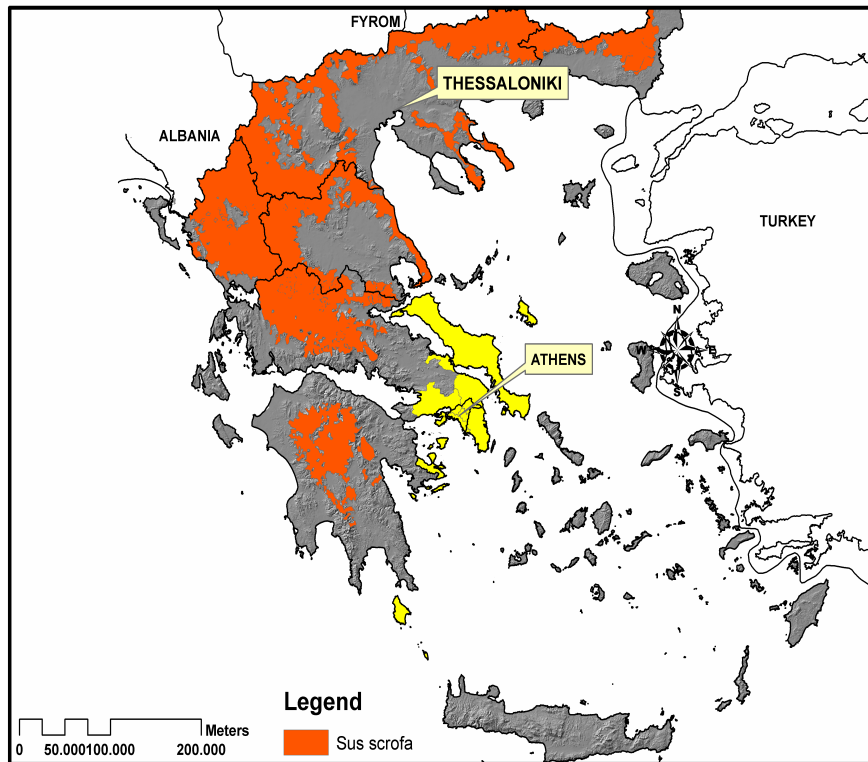
The study took place in the year 2004. Data were gathered from all 38 counties of the Greek mainland, as well as from the larger forested Greek islands: Crete, Rodos, Samos, Lesbos, Limnos, Thasos, Corfu, Kefalonia and Zakynthos. Data were gathered through a questionnaire distributed to 169 Federal Rangers (Tsachalidis et al. 2005) at the local hunting clubs of the Hellenic Hunting Association, after the wild boar breeding season. Each ranger recorded his observations only from his jurisdiction. In their attempt to locate localities of wild boar they requested information from foresters, farmers, hunters, and people working in the forest and in fields. During the survey, they searched for signs of wild boar by searching the gullies on foot and also by travelling the roads using a four-wheel drive car and on foot, searching for signs of digging, scats, footprints, rubbing on trees, and mud wallows, assisted by foresters and hunters (Markov et al. 2004, Monaco et al. 2004). All the questionnaires were returned completed.

## 3 RESULTS, DISCUSSION

With the exception of Attica, Evian and islands, wild boar was present on all Greek mainland counties. Attica is a densely inhabited area, which includes the largest Greek city of Athens (5,000,000 inhabitants). Also, the species it is not found in Evian, due to the lack of suitable habitat (a lot o *Pinus halepensis*) and it also connected with the rest of Greece with a bridge (*Map 1, yellow area*).

The species can be found in 263 localities, in an area around 19,495 km<sup>2</sup>, which is 18,9% of the extent of the study area or the 14% of the country (*Table 1*). The mean distribution altitude reaches 686 ± 266 m. Based on the mean density and deviation (0.98 ± 0, 21 ind/km<sup>2</sup>)

the average population number all over Greece was estimated at 19,033 individuals with maximum population level 23,030 animals, and a minimum of 16,536. The highest mean density was observed in the prefecture of Sterea Hellas (1.26 ind/km<sup>2</sup>) and the lowest in the prefecture of Thrace (0.89 ind/km<sup>2</sup>). The maximum density is observed in Sterea Hellas (3.14 ind/km<sup>2</sup>) and the minimum density is observed in Thrace (0.13 ind/km<sup>2</sup>) (Table 1).



Map 1. Distribution of wild boar in Greece

Table 1. Population distribution and mean density of the species *Sus scrofa* L. (wild boar) per geographic district, in the Greece, during 2004

Prefecture (geographic district)	Area		Wild boar population (N)	Density (individuals/km <sup>2</sup> )		
	prefecture (km <sup>2</sup> )	habitat (km <sup>2</sup> ) (%)		Mean	Max	Min
1 <i>Thrace</i>	8,524	1,025 12.0	915	0.89	1.1	0.13
2 <i>Macedonia</i>	35,728	7,192 20.1	6,548	0.91	2.04	0.37
3 <i>Thessaly</i>	13,880	2,960 21.3	3,395	1.15	2.43	0.38
4 <i>Epirus</i>	9,210	2,860 31.1	1,935	0.68	1.01	0.31
5 <i>Sterea Hellas</i>	16,840	3,333 19.8	4,210	1.26	3.14	0.47
6 <i>Peloponnesus</i>	19,230	2,072 10.8	2,030	0.98	2.57	0.31
<b>Total</b>	103,412	19,442 18.9	19,033	0.98±0.21	2.05	0.33

The most important wild boar habitat is oak forests (76,4%), followed by chestnut forests (9,6%) and various coniferous forests (6,2%) (Table 2). The species avoids coniferous or broad leaved homogenous forests.

Table 2. Types of habitat occupied by wild boar with dominant species

Categories of habitats with dominant species	Area of habitat	
	(km <sup>2</sup> )	(%)
Oak	255	1.3
Oak – Broadleaves	1,847	9.6
Oak – Beech	3,530	18.4
Oak – Fir	2,974	15.5
Oak – Holly ( <i>Quercus coccifera</i> )	4,188	21.8
Oak – Pine	717	3.7
Oak – Chestnut	333	1.7
Broadleaves – Oak	825	4.3
Beech	375	2.0
Beech – Chestnut	480	2.5
Chestnut – Broadleaves	1,365	7.1
Pine	195	1.0
Pine – Fir	498	2.6
Pine – Broadleaves	500	2.6
Holly – Broadleaves	580	3.0
Evergreen broadleaves – Holly	681	3.5
Wetlands	99	0.5
Total	19,442	100.0

The above results are expected to provide valuable information for the management of this important game species.

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