

Assessment of Greek forests protection and management

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1. Introduction

A mutual relationship of "debit and credit" is established between the forest, which forms a natural entity with its surface area, and humans, with all their needs which should be fulfilled in the forest or by the forest (Papastavrou, 1985).

The management of natural resources and natural areas, in general, entails a set of well-defined measures, combining the rational use of natural resources with social evolution, without affecting the natural balance (Valiantzas, 1989).

The aim of forest management should be the improvement of deteriorated ecosystems, forest protection, rendering services and providing goods to meet the multiple requirements of human beings (S-tasinopoulos, 1987 and Spanos, 1993).

Forest protection should be integral part of any administrative study and guideline for any action to be taken in the forest. Accordingly, the application of a sound management is an essential prerequisite to provide goods and services and a decisive factor to protect forests mostly against fires and illegal trespassing.

Unluckily, Greece has the sad privilege of not possessing a full-scale forest cadastre, allowing to insure the citizens' ownership and the state property. Goupos (1991) reports that in Halkidiki, cases of forest trespassing are on

Abstract

The main goal of this work was to investigate the citizens' views on their relationship with the Forest Service all over Greece. Although the view expressed was relatively positive, much has still to be done in order to reverse the neutral attitude of some citizens. Furthermore, the citizens' awareness about the European Union funding programs to convert rural areas into forest plantations needs to be assessed. The population in the Central and Northern areas of Greece was better informed compared to the islands and Thrace. The existence of good relations with the Forest Service allows better information of citizens.

Finally, most Greek citizens believe that forests are neither managed efficiently nor protected properly, and therefore they foresee an ominous future. Citizens maintain that management is directly related to forest protection and to the future of the country's forests.

Résumé

Ce travail a pour objectif d'évaluer l'opinion des citoyens grecs sur les relations qu'ils entretiennent avec l'administration forestière. Bien que, dans l'ensemble, l'opinion exprimée soit relativement positive, dans certain cas, on se trouve confronté à une attitude neutre qui devrait être modifiée. De plus, on a essayé d'estimer le niveau d'information des citoyens sur les subventions de la Communauté Européenne pour la transformation de terres agricoles en espaces de cultures forestières. Dans les régions du centre et du nord de la Grèce, la population était mieux informée que dans la Grèce insulaire et la Thrace. Il a été montré que les bonnes relations avec l'administration forestière favorisent une meilleure information des citoyens.

Enfin, la majorité des citoyens grecs sont convaincus que les forêts dans leur pays ne sont ni bien aménagées ni protégées suffisamment et que leur avenir est compromis. De fait, ils pensent que l'aménagement est directement lié à la protection des espaces forestiers et au futur même des forêts du pays.

the decrease and this is mainly due to the development of a Forest Cadastre.

Forest protection falls within the activities of the Forest Service, which, however, are carried out only during the working hours of a public service (eight hours a day - weekdays). The establishment of the Forest Corps was aimed at meeting this need, i.e. protecting the forest ecosystems round the clock. Unfortunately, the opportunity of performing properly this function failed in 1998 when forest firefighting was assigned to the Fire Service and consequently, most of the Forest Service's personnel was

assigned to the Fire Service. As a result, protection of woods and forests has become more ineffective.

Financial support to convert rural areas into plantations of forest species represents an indirect measure taken by the European Union to promote forest protection. The EU Regulation 1609/1989, which concerns "changes in the field of rural areas afforestation following the EU Regulation 797/1985 for the improvement of rural structures efficiency" encourages Member States to convert rural cultivations into plantations of forest species, by supporting the study, establishment and cultivation of the areas. Furthermore, the Council Regulation 2080/1992 "for the enactment of communal status quo of supporting measures for agriculture", mainly aims at the afforestation of rural areas and their support. These activities are of great significance for land use and reduction of forest resources deficiency in the EU; on the other hand, they

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stand for an additional measure of communal policy to control agricultural production. Moreover, this program aims at recovering the income of people involved in agriculture.

This is one of the few cases in which the Forest Service, in charge of this program, proves to be friendly towards Greek farmers or landowners, thus suggesting that some reliable alternatives may be envisaged to face the crisis affecting agriculture in our country.

The goal of this work is to probe into citizens' views on their relationship with the Forest Service and to assess the Forest Service's efficiency in promoting the EU funding policy to favour conversion of rural areas into forest plantations. At the same time, the citizens' opinion about forest management, protection efficiency and future prospects for Greek forests is investigated.

2. Material and methods

The sociological research process was carried out conducting personal interviews. The whole country formed the research area. Population of interest (statistic population) includes exclusively adult citizens of Greece. The method applied was stratified random sampling. Furthermore, geographical strata were taken into account for the strata formation in all the country prefectures. The estimator of the population's ratio p_{st} is defined as follows

$$p_{st} = \frac{\sum_{h=1}^L r_h \times p_h}{\sum_{h=1}^L r_h}$$

where r_h = relevant size of h stratum (use of the legal population according to the census of March 17th 1991)

p_h = ratio evaluation in the h stratum

The ratio's typical estimated error without the correction of the finite population, since sampling fractions are minor in each stratum, is determined as follows:

$$s_{p_{st}} = \sqrt{\frac{\sum_{h=1}^L \left(r_h^2 \frac{p_h(1-p_h)}{n_h-1} \right)}{\left(\sum_{h=1}^L r_h \right)^2}}$$

Estimations made for each stratum separately are equal to those of a simple random sampling, since in each stratum a simple fortuitous sample was taken (Matis, 1988 and Daoutopoulos 1994).

In order to determine the sampling size, a pre-sample of 10 persons per prefecture was taken. Considering the maximum admitted difference ($e=0,05$) and all questionnaire's variables and based on the type of "equal samples

in each stratum", a total sampling size of 41 persons for each stratum (51 prefectures in the country) was determined.

The data collection started in 1996 and was concluded in the middle of the subsequent year. Personal interviews were conducted to fill in the questionnaire and no special problem was raised by citizens.

The homogeneity analysis was then applied, thus allowing, through the minimum squares procedure, to quantify, with excellent rates, any variable category. Accordingly, categories of each variable have a maximum dispersion width. The homogeneity analysis is a kind of analysis including the main components of nominal data. (Leeuw Rijckevorsel 1980, Nishisato 1980, Young 1981, Meulman 1982, Greenacre 1984, Lebart et al., 1984, Tenenhaus and Young 1985, Gifi 1990, Siardos 1999).

Concerning the data analysis, the statistic SPSS package was used.

3. Results and discussion

The results obtained are rendered separately for the stratified random sampling and the homogeneity analysis. The two methods are complementary and contribute to better understand the citizens' view on the topics debated.

3.1 Stratified random sampling

The relationship between the citizens and the Forest Service is satisfactory. 51.1% of the citizens ($s_p=0.024$) all over the country state that they have a good relationship with the Forest Service. Likewise, a high percentage of the citizens have no relation at all with the Forest Service (41%, $s_p=0.024$). A minimum percentage of 1.1% ($s_p=0.002$) has a bad relation with the Forest Service, whereas 6.8% ($s_p=0.006$) are indifferent.

Obviously, the citizens' relationship with the Forest Service could be improved and to this end, the Forest Service managers should enhance their public relations in general.

52.5% ($s_p=0.024$) of the citizens are aware of the European Union funds available to convert the rural and non-productive areas into forest plantations, whereas 47.5% ($s_p=0.024$) are not informed on this matter.

Indeed, the percentage of people who have good relations with the Forest Service equals approximately that of people informed about the EU programs.

The citizens' awareness of the aforementioned forestry measures in agriculture reveals the extent of the successful efforts of the Forest Service to promote the Communal Policy, thereby promoting itself.

We can draw the following conclusions: in Central and Northern Greece, where agriculture development is more considerable, citizens are generally informed about these measures with the exception of Attica and Thessaloniki

prefectures, where the urban centres are located.

Conversely, on the Aegean and Ionian islands, citizens are not at all informed about these programs, which may be explained by the increasing abandonment of agriculture and the greater involvement in tourism. In the prefectures of Thrace, though agriculture represents the main occupation, the inhabitants are less informed, thus highlighting the isolation of these areas.

When citizens were asked their view on the country's forests management in terms of services and products provided, the majority responded negatively, with a percentage of 67.2% ($s_p=0.024$). Only 9.6% ($s_p=0.013$) of the citizens responded positively, whereas 23.2% ($s_p=0.023$) gave no answer.

Forests and forest areas protection in our country is very difficult due to the lack of a Forest Cadastre, of well-trained personnel and appropriate funding in the forestry sector.

Most of the population (51.2%, $s_p=0.024$) stated that our forests resemble an "unfenced vineyard" (a local expression, which means that anyone can do whatever they like without being controlled), whereas 9.8% ($s_p=0.016$) responded negatively. The remaining 39% ($s_p=0.024$) responded that this is the case more or less.

Cases of trespassing and land reclamation become more frequent because the rejection procedure for those who attempt to reclaim the forests and trials for forest trespassing are usually time-consuming and do not allow immediate actions of the Forest Service when the law is broken. Therefore, the idea of impunity is increasingly spreading.

The prevailing view of the citizens on the future of the country's forests and forest areas is ominous. 77% ($s_p=0.022$) foresee an ecosystem reduction, whereas only 12.1% ($s_p=0.017$) believe in the ecosystem expansion. Finally, 10.8% ($s_p=0.017$) of the population believes that forests will remain unchanged.

A feeling of pessimism about the future of the forests is clearly noticed, for which the Forest Service has partially to be blamed. As a matter of fact, the Fire Service has mainly promoted forests destruction to raise the citizens' awareness about forest fire prevention. A more optimistic attitude seems to prevail in the highland prefectures such as Florina, Eurytania, Pieria, Janina, Preveza etc., because, due to the countryside abandonment, forests are encroaching on fields in remote mountainous areas and as a result, this is perceived by some citizens as an expansion of the forest areas of the country.

3.2 Homogeneity analysis

The adaptability of homogeneity analysis program was fully obtained after 20 revisions with the accomplishment of the convergence criterion (value 0.00001). Solution of both dimensions gave values of characteristic roots $\lambda_1=0.265$ and $\lambda_2=0.246$, which state that

26.5% of the interpreted fluctuation of the categories values may be explained by the first dimension and 24.6% by the second one.

Distinctive measures for both dimensions, corresponding to the analysis loads of the main components, are reported in Table 1, where the variables "relations with the Forest Service" and to a lesser extent "awareness of EU funding programs" and "forests future" appear in distinctive values in the first dimension, whereas variables referring to the management and protection display present high distinctive values in the second dimension. The variable "gender" is very close to the section point of the axes and does not vary between the two dimensions, an element which has no relation with the remaining five variables.

Table 1. *Distribution of variables in categories*

Variable	Dimension 1	Dimension 2
Sex	0,066	0,160
Relationship with the Forest Service	0,401	0,100
EU funding	0,322	0,171
The forests are uncontrolled	0,278	0,350
The forests of our country will be	0,317	0,231
Our forests have a good management	0,203	0,464

Table 2. *Quantitative labels of variables in categories*

Variable / Category	Dimension 1	Dimension 2
Sex		
Men	0.25	-0.39
Woman	-0.26	0.41
Relationship with the Forest Service		
Excellent	0.58	-0.29
Good	-0.35	0.17
Bad	-1.53	0.16
No relationship	-0.70	0.38
EU funding		
Yes	0.50	-0.36
No	-0.64	0.47
The forests are uncontrolled		
Yes	-0.31	-0.47
No	1.54	1.37
Not exactly	0.08	0.39
The forests of our country will be		
increased	1.55	0.76
reduced	-0.22	-0.25
remain the same	-0.10	1.10
Our forests have a good management		
Yes	1.31	0.55
No	-0.15	-0.40
I dont know	-0.20	1.39

Quantified values of the variables categories appear in Table 2. According to the coordinates, the diagram of categories dispersion is drawn (Figure 1). Categories containing a high degree of identical subjects are closer to each other. Therefore, it is possible to identify four main groups.

Among them, the categories “men”, “good relations with the Forest Service” and “awareness of the European Union programs” form the first group. The exactly opposite group (second group) is composed of “women”, “no or indifferent relation with the Forest Service” and “unawareness of the EU programs”.

As expected, “good relations” with the Forest Service will result into citizens’ information about the EU programs. Furthermore, it appears that men are better informed and related to the Forest Service, compared to women. Among other factors (woman position in the society and family, etc.), this may be ascribed to the fact that men are hunters, whereas women do not practice hunting. A fundamental parameter for good relations and communication with the Forest Service is the citizen’s contact ability towards the public sector.

The third group is close to the previous ones and contains the categories “forests will diminish”, “no management” and “unfenced vineyard”. The exactly opposite group (fourth group), located far away from all other groups, contains the categories “forests will increase”, “well administrated” and “are well protected”.

We could suggest that the difference between these latter groups forms the citizens’ ability to get informed about forests administration. The productive forests are located in the highlands and obviously, the population

living in the woodlands may be informed of the actions taken in the forests; on the other hand, and mainly under the media pressure, the urban population associates the idea of forests to forest fires and illegal trespassing.

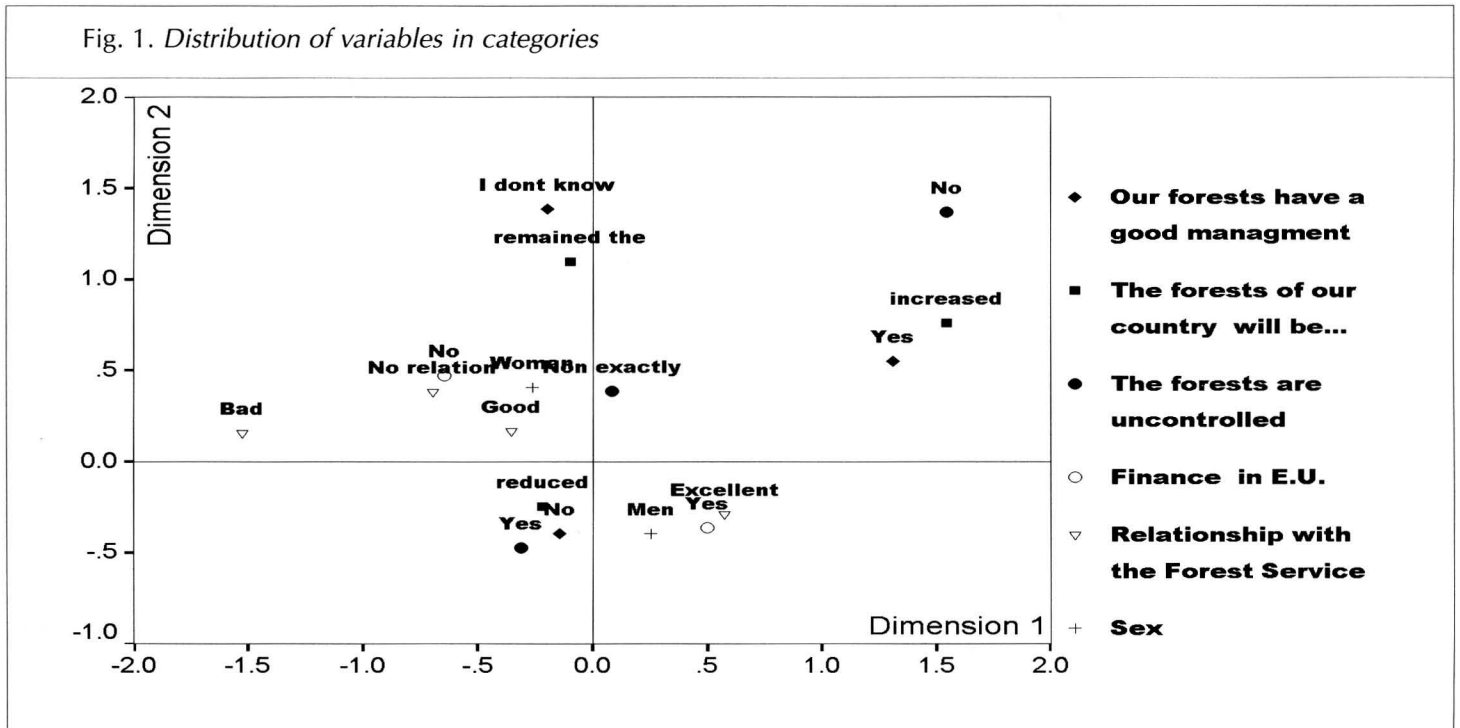
A fifth group contains the categories “forests will remain as they are”, whereas citizens “do not know whether they are well administrated or not” and this confirms the fact that citizens relate, as said before, forests administration to their future. If they are not informed about forests management, they assume that their size will remain the same.

Finally, the category “bad relations” of the variable relationship with the Forest Service seems to have no relevance at all to the other variables; consequently, we can conclude that the citizens’ attitude towards the Forest Service is not affected by personal differences. Besides, the category “more or less” of the variable referred to lack of control of our forests, could be included in the second group, thus indicating that women use milder characterizations, without diversifying what we have described so far.

4. Conclusions and proposals

The citizens’ relationship with the Forest Service is in general good, with a percentage of 51,1%, but in the future it could become even better by trying to approach a large part of the citizens (i.e. 41%) who have no relation at all and to soften the negative attitude exhibited by a small part of the population. To this end the Forest Service should rely upon well-trained and specialized executives and broaden its activities to attract more citizens (urban population), by designing and supporting pro-

Fig. 1. Distribution of variables in categories



grams of environmental education, recycling, protection of threatened animals, creation of greenswards in urban centers etc. Apart from its traditional activities, the Forest Service should extend its scope to fulfill the requirements and face the environmental anxieties of our society.

As regards the EU funds for conversion of rural and non-productive areas into forest plantations, only approximately half (52,5%) of the population is informed and mainly in the Northern and Central areas of the country, where a significant part of rural areas are located. Thrace is an exception in so far as most of its inhabitants are involved in agriculture, but remain uninformed.

In cases where the citizens' relationship with the Forest Service is good, there is more information about the EU programs. Men seem to have better relations and be more informed than women, which may be explained by the fact that they practice hunting and therefore, come in contact with the Forest Service.

Most citizens (67,2%) believe that forests in our country are not properly managed in terms of services and products provided to citizens. As a result, the government should promptly take decisive actions to promote the sound management of our forests.

A significant part of the citizens (51,2%) believe that our forests are uncontrolled, whereas 39% claims that this is more or less the case. It is therefore necessary to envisage the development of the Forest Cadastre to regain the citizens' trust towards the Forest Service. At the same time, this would allow to counterbalance the ominous prediction of a significant percentage of citizens (77%) about the forests decrease.

Citizens associate forests management to their protection and future. Generally speaking, the urban population believes that forests are not properly managed and protected and that they are being considerably reduced. On the other hand, the highlands' population (living near forests) recognize that forests are duly managed and protected and that their surface will increase since they are encroaching on desert marginal rural areas.

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