

THE IMPACT OF PERCEIVED LAND-USE VALUES
ON BIODIVERSITY CONSERVATION

IN THE VIKOS- AOOS NATIONAL PARK,

PAPIGO, GREECE

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By

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ABSTRACT

Peoples changing perceptions and cultural values may result in changed landscape structure. Especially in the Mediterranean where long-term human disturbance has frequently resulted in higher species changes in 'cultural landscapes' are a major risk for biodiversity.

This study measures perception of habitat values and uses among stakeholder groups in a mountainous village in northwest Greece. Agricultural abandonment and rural depopulation, mainly after the Second World War, and recently increase of tourism because of tourist development and the designation of the area as national park have had a big impact on perceived habitat values and the landscape.

Semi-structured interviews with the help of photographs, scoring for perceived value of habitats and perceived changes in natural environment proved very successful in establishing whether land use patterns and pressures can be predicted by the perceptions of habitat value and use among stakeholder groups.

What resulted was that perceived habitat value and use are strongly correlated. The most beautiful and important areas at present appear to be those where human pressures are bigger. Human pressures from the area around the village where landscape used to be the most modified by long lasting management practices are extending out to formerly isolated spots used now by tourists.

Young people and newcomers have a higher perceived value of the area and recognize 'ecological' values as the most important components of their environment. Utilitarian reasons mentioned by older people are decreasing

ABSTRACT

People change perceptions and cultural values over time in changing language systems. Especially in the Balkans, where language human distance has recently resulted in higher speed change in cultural behaviors as a major risk for biodiversity.

The study examines perceptions of habitat value and use among stakeholders from a mountainous village in northern Greece. Agricultural abandonment and depopulation started after the Second World War and strongly reduced the area of forest development and the degradation of the area as a result of a big impact on preserved habitat value and the landscape.

Questionnaires were the help of photographs showing for perceived value of habitat and perceived value in natural environment proved very successful in establishing where the patterns and processes can be perceived by the perception of habitat and use among stakeholders groups.

The results are the perceived habitat value and use are the considered. The most beautiful and important areas in present appear to be where human pressure is higher. Human pressure from the area around the village where landscape used to be the most modified by long lasting management practices are considered as to be mostly isolated areas used now by tourists.

Young people and newcomers have a higher perceived value of the area and recognize 'ecological' values as the most important components of their environment. Urbanization remains mentioned by older people as decreasing

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along with abandonment of traditional activities. The most valuable places in the past were related to farming and are now being replaced by those used intensively in present by the local tourist business. People recognize recovery of vegetation due to abandonment as the main type of change in the area.

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1. INTRODUCTION

The fundamental premise for examining human culture in ecology is that culture structures landscapes and these landscapes are the beginning of a series of consequences in biodiversity.

Landscapes are significantly influenced by culture and therefore changed perceptions and cultural values may result in changed landscapes. Especially in the Mediterranean basin "domesticated or cultural landscapes" are particularly vulnerable to changes in socio-economic processes.

Such dramatic changes in the last few years in Mikro Papigo and Megalo Papigo, a mountainous region at 1,100 m. altitude in north-west Greece made this area a convenient region for this study.

In the beginning of the 20th century this isolated community had a self-sufficient life style utilizing the full potential of its land for cultivation, grazing and every day needs. Socioeconomic changes lead to changes in this system and the total abandonment of agriculture after the Second World War. The designation of the area as national park and the restoration of the village as part of a tourist development programme was the latest cultural change in the area and resulted in enormous increases in tourists in the last 15 years followed by significant changes in traditional land uses.

The aim of this study was to investigate traditional and modern land uses and to test if changes in these practices are correlated with changes in values adopted by the local population. The areas that different people use preferentially over time, know best, and value highly were compared in order to find if changes have an effect on human pressure in different habitats and consequently on biodiversity.

Thus the hypothesis to be tested was if the impact of changes in land-use patterns can be predicted by the perceptions of habitat value and use among stakeholder groups.

Collection of data was based on a combination of qualitative and quantitative tools. Historical evidence and information, semi-structured interviews with the help of photographs, scoring for perceived value of habitats and perceived changes in natural environment were all used in order to find land use patterns, perceived values and pressures in a variety of habitats, recognized by Natura 2000, the network of special areas of conservation in EC according to the "Habitats Directive" (92/43/EEC).

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2. LITERATURE REVIEW

Nowadays, there is a recognition that what was so far considered as pristine nature and untouched wilderness are in fact “domesticated or cultural landscapes”, a result of a long interaction of human populations and environment which has produced irreversible changes in biological as well as ecological diversity (Bennett, 1996; Farina, 1998). Even in the tropical regions many areas which were formerly considered as “natural” are the products of aboriginal and historical human presence (Posey, 1993). 12% of the Brazilian Amazon rainforests have signs of former human occupation (Balée, 1989), while similar observations have been made for Australia, Papua New Guinea and West Sumatra (Boerboom & Wiersum, 1983; Mabberley, 1992).

Especially in regions with Mediterranean climate the combination of a vulnerable environment and human occupation have made the impacts of human modification of the landscape very obvious (Naveh & Dan, 1973). The lowest population density in any Mediterranean climate zone in the world is found in Australia and despite this, it has been said that it represents the world's most disturbed natural ecosystem (Aschmann, 1973).

In addition human pressures on the natural ecosystems of Mediterranean Basin, which was the cradle of some of the world's most ancient civilizations, have

existed for so long that di Castri (1981) did not hesitate to argue that a complex co-evolution has shaped the interactions between the ecosystem and humans through long-lasting but constantly evolving land use practices (Di Castri, 1981, in Blondel & Aronson, 1999).

Thus, a cultural landscape could be defined as one which has been changed to some degree by long-term human disturbance by which a unique assemblage of patterns, species and processes has been created (Farina, 1998).

The modification of an ecosystem by human activities is a relatively slow and cumulative process. As cultural landscapes have extended over large parts of Europe and Mediterranean from at least the Holocene period, the area has been so profoundly transformed by human occupation that appreciation of 'landscape archaeology' is necessary in order to understand what we see in the present (Aschmann, 1973; Blondel & Aronson, 1999).

There are an infinite number of types of cultural landscape around the world and tremendous variation in the nature and intensity of the modification of natural ecosystems, but all are strictly structured according to local tradition, cultural practices and values that vary in detail among societies and from one historical period to the next as a result of changing demographic and socio-economic conditions (Aschmann, 1973; Farina, 1998; Blondel & Aronson, 1999).

Features such as, for example, the preferred grain for breadstuffs, the species of domestic animal herded, or whether agriculture is a commercial enterprise or a subsistence way of life have strongly affected the choice of land for cultivation or abandonment and the intensity of imposition of a cultural landscape in place of the natural one (Aschmann, 1973).

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In particular livestock husbandry and breeding that have been of enormous importance to humans from at least the Neolithic revolution in the Mediterranean are among the most important forces shaping Mediterranean landscapes (Blondel & Aronson, 1999). Goats have been blamed as the main culprits of Mediterranean land ruin as almost everywhere is accessible to, and affected, by them (Kolars, 1966, in Aschmann, 1973; Naveh & Dan, 1973).

Although cultural landscapes are generally created by sedentary populations, there is no reason to exclude landscapes modified by nomadic populations (Farina, 1998). For example, the alpine zone in the mountains around the Mediterranean has been extended down into the tree zone as a result of transhumance.

Apart from livestock, other human activities and needs such as clearing of trees for agriculture, domestic firewood, furniture, charcoal and construction had their own impacts on the landscape especially in the vicinity of human habitation and villages.

An undeniable part of this process was forest destruction and replacement by simpler systems providing a more convivial 'space' for people. Native forests, never abundant or fast growing, came to be recognized as a resource that needed care and protection and in many cases traditional conservation systems, sometimes through religion, were a common practice in various societies (Martin, 1994; Berkes, 1999).

Prehistoric peoples in the Mediterranean are held largely responsible for the mass extinction of large mammals in the upper Pleistocene while in historical times the destruction of forests lead to extinction of forest animals, e.g. the fallow deer (*Cervus dama*) which persisted until 1850 in the forests of central Greece (Catsadorakis, 1999).

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Although the general assumption that human influence on the landscape always has a negative effect on biodiversity in some cases it creates or maintains biodiversity (Gotzmark, 1992, in Farina, 1998).

For example, very few species of birds have become extinct as a result of human activities while species of arid and shrubby habitats have benefited from large-scale deforestation and habitat degradation (Covas & Blondel, 1997). Moreover, the result of long standing human activities in the structure and composition of the vegetation and many individual species has resulted in a wide array of adaptations to human perturbations that include fire setting, clear-cutting, heavy browsing and grazing by herds of domestic livestock and ploughing (Blondel & Aronson, 1999).

A cultural landscape requires the human stewardship to be maintained, and returns to its natural condition when human interference disappears or is reduced. The complex and fragile nature of cultural landscapes is reflected in the follows statement by Unesco Secretariat in 1991 proposed guidelines to identify valuable and endangered cultural landscapes as: “ ... An outstanding example of a cultural landscape resulting from associations of cultural and natural elements significant from the historical, aesthetic, ethnological, or anthropological points of view and evidencing an harmonious balance between nature and human activity over a very long period of time which is rare and vulnerable under the impact of irreversible change” (reported in von Droste et al., 1995, in Farina, 1998, p. 131).

Furthermore, and despite, the fact that the category of protected landscape or seascape has been recognized by the IUCN from 1978 in its system of protected area management categories (Lucas, 1992), it was not until 1996 that the positive

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value of the interaction between humankind and nature was recognised (Phillips, 1999).

This idea of interaction, based on a profound knowledge of ecological dynamics and extremely complex management strategies by people living in particular areas, has led to a view that such knowledge is necessary for sustainable practices and reflects a balance of people's needs and nature evolved over time (Martin, 1994; Warburton & Martin, 1999).

These new approaches have resulted in the abandonment of the American "Yellowstone model", in which people are excluded from national parks and other nature reserves, in the light of recent research which highlights the crucial role of human influences on maintaining biodiversity (Martin, 1994; Cotton, 1996; Balick & Cox, 1997; Tuxill & Nabhan, 1998; Jackson & Ingles, 1998).

E.g. in Australia, aboriginal knowledge of the land is more detailed, complex and extensive than current knowledge based on scientific and management studies and cultural landscapes are maintained only through the practice and implementation of Aboriginal knowledge systems. Moreover, as Aboriginal representatives say a national park without the presence of Aboriginal peoples is "like a table with one leg... It's not very stable" (Cotton, 1996).

In conclusion, it could be said that a central underlying premise resulting from the above is that culture and landscape interact in a feedback in which culture structures landscapes and landscapes mirror culture. Human landscape perception, cognition and values directly affect the landscape and are affected by the landscape and cultural conventions powerfully influence landscape pattern while the appearance of landscapes communicates cultural values (Nassauer, 1995).

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Landscapes are made according to the political system in which they operate, the economic use we see for land, our aesthetic preferences, our social conventions, all of which are summarized under the label of culture. Therefore, changed public perceptions and cultural values may result in changed landscape structure or they may produce heavy modifications in that structure and consequently affect biodiversity (Nassauer, 1995).

Altogether, as landscape, biodiversity, land use and culture co evolve together the purpose of this study was to test more precisely how changes in culture mirror changes in land use and landscape and vice versa.

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3. DESCRIPTION OF THE STUDY AREA

3.1 Papigo and its surroundings

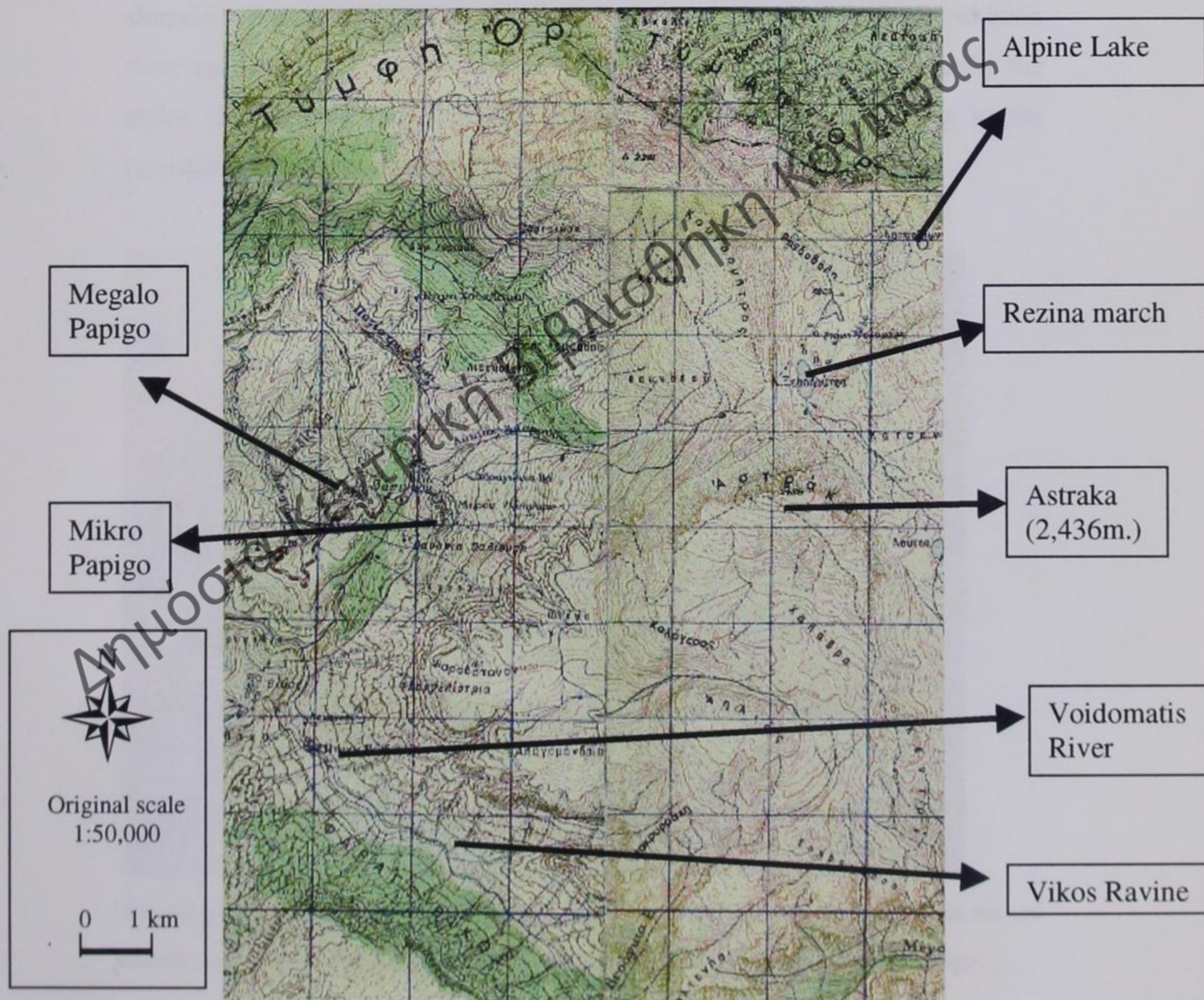
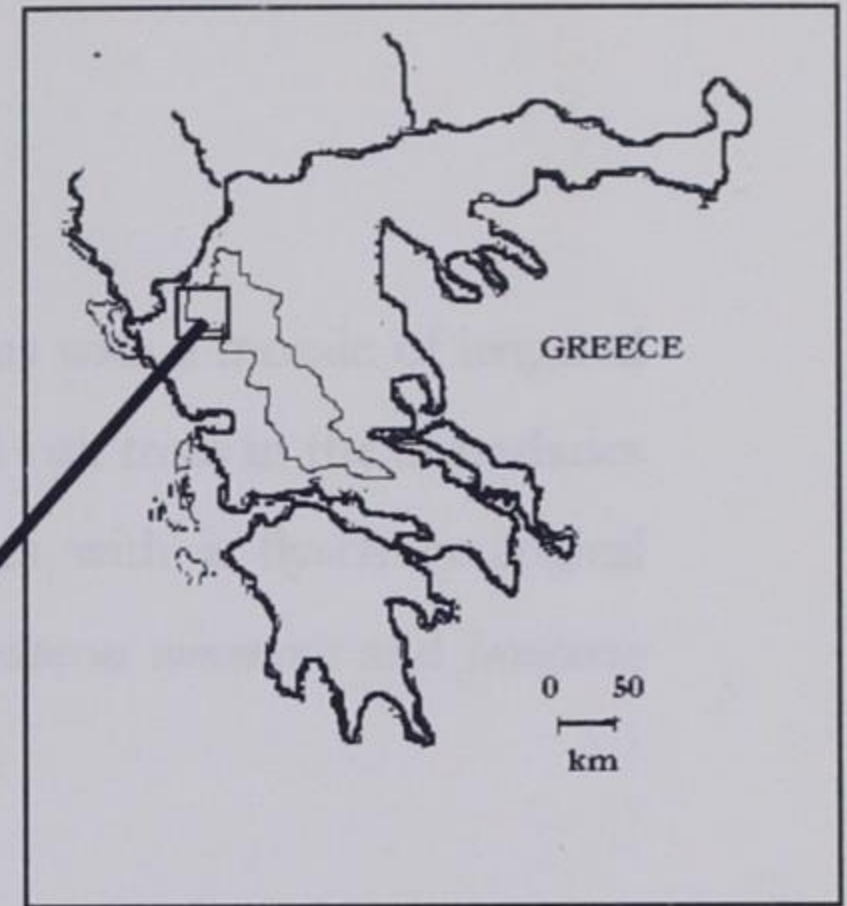
The study took place in Papigo (39° 96' N, 20° 49' E) one of a network of 45 villages in the district of Zagori in the west of Greece. Zagori constitutes a geographical unit completely defined by the mountains of Tymfi (highest peak Gamila, 2,497 m.) and Mitsikeli (1,810 m.). These mountains are part of the massive Pindus Mountain Range which stretches from Albania to Central Greece covered with dense vegetation and thick forests with rocky and sheer outcrops of limestone and flysch (Willis, 1992b) (see Map 1).

Within Zagori, Papigo has an exceptional natural setting under of 'the towers of Tymfi' (Astraka, 2,436 m) and facing the Vikos ravine, and it is one of the first organized settlements in Zagori (Labridis, 1889). The settlement is divided in two districts called by the inhabitants the big and the small village, hence Megalo and Micro Papigo. The land belong to the district is 34,100 acres (see Map 2).

Papigo land includes a great diversity of biotopes ranging from the alpine meadows at 1,800 – 2,500 m. and descending to fir, juniper and pine forests, which are replaced by mixed oak wood in the lower zone where the villages are situated (1,100 m).

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Map 1: Location of the study area in the Pindus mountain range of northwest Greece

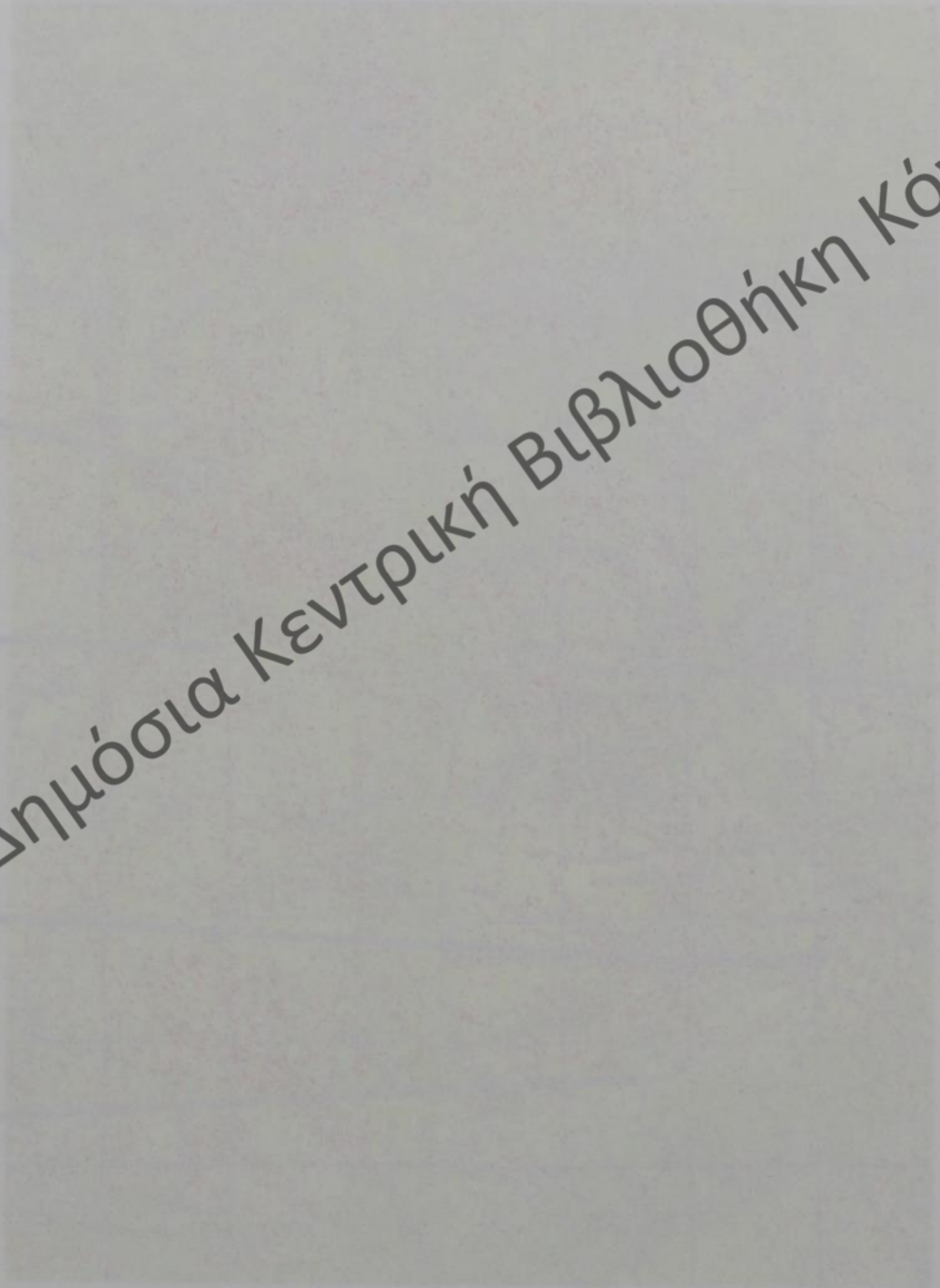


Map 2: Close view of the study area showing Mikro and Megalo Papigo and most characteristic features.



Map 1: Location of the study area in the Pindus mountain range of northwest Greece

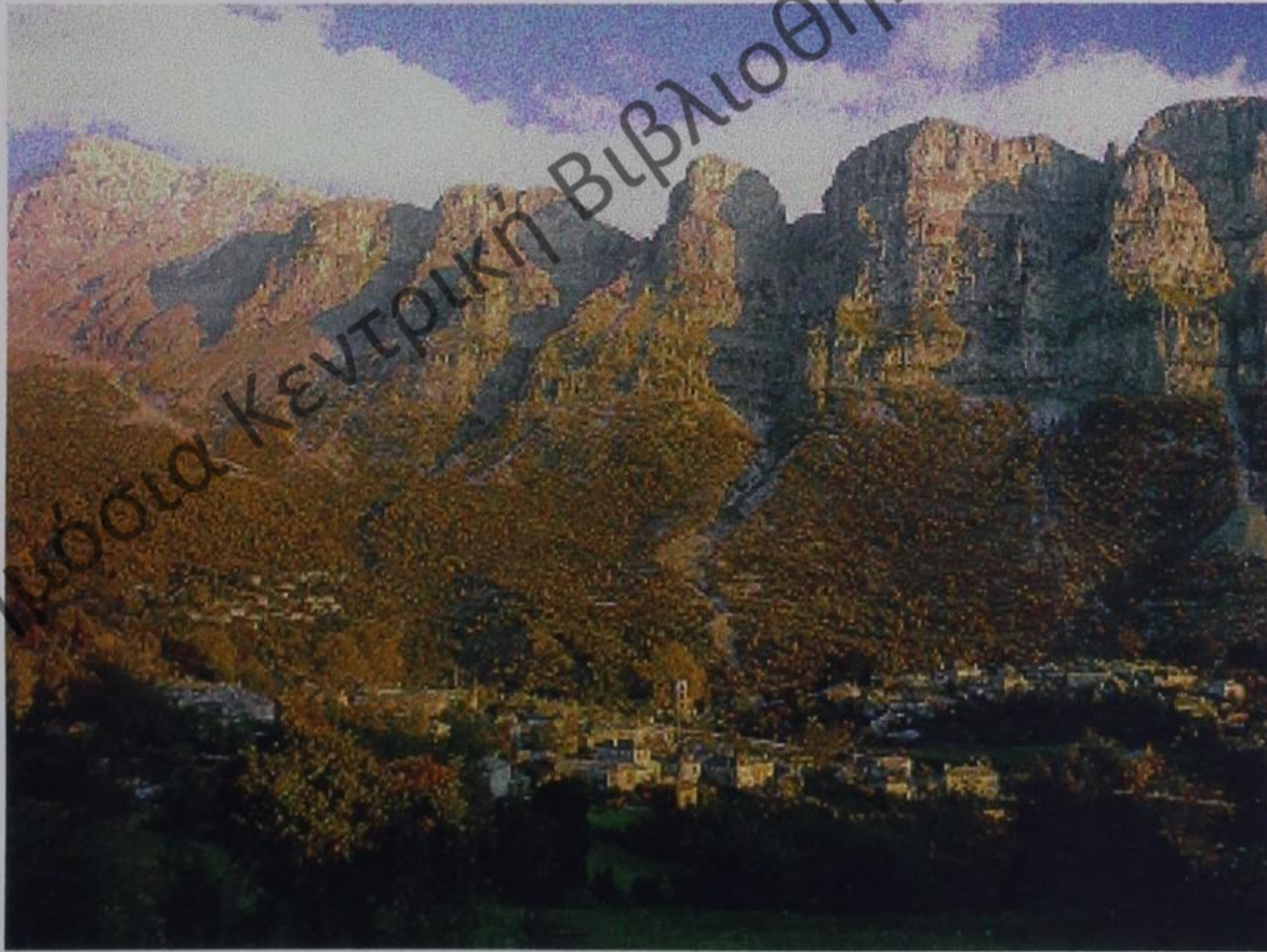
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Map 2: Close view of the study area showing Mikro and Megas Epigoni and the characteristic features.

Around the villages human occupation is very obvious with a mosaic of irrigated gardens and orchards in the areas with water, pruned oak trees in the boundaries of the old fields and pastureland in the dry places with a flysch geological substratum where the vegetation is dominated by *Juniperus communis* and *Juniperus oxycedrus* formations.

Scerophyllous oak wood below the village reaches down to the river (500 m. altitude) where the vegetation consists of platanus riparian forest. In addition there are steep slopes with associated narrow meadows, screes, and finally the ravine of Vikos with its altitudinal range of 2,000 m. all contributing to the particularly diverse character of the area (see Photograph 1).



Photograph 1: Papigo and its surroundings. The settlement has an exceptional natural setting under of the towers of Tymfi.. Foreground the ‘small village’, Mikro Papigo.

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3.2 Natural history

Palaeobotanical evidence from Rezina marsh which is located in the alpine meadows inside the boundaries of the study area, (c.2 km north of the Astraka ridge at height of 1800 m.) suggests that at the earliest stages of the postglacial (c. 9,970 BP) vegetation of this area was a steppe community with many herbaceous taxa while a variety of trees, such as *Pinus*, *Quercus*, *Abies*, *Carpinus orientalis*, *Ostrya carpinifolia*, *Ulmus*, *Juniperus*, *Corylus* and *Salix*, were present in small numbers (Willis, 1992a). By c. 9,800 BP the steppe vegetation had become greatly reduced with the development of a mixed woodland, with an open canopy of trees and grasses. This woodland persisted, although dominance of tree types changed several times, until c. 6,000 BP. Then a large increase in herbaceous taxa, in particular grasses occurred with the gradual reduction in all tree types (Willis, 1992a).

Although there was some recovery of the woodland around c. 5,000 BP, anthropogenic intervention, in particular Bronze age clearance and pastoral activity similar to the present day transhumance around c. 4,000 BP led to the total destruction of this forest and to the development of an open grassland similar to the present day situation (Willis, 1992a; Willis, 1992b).

After 4,000 BP the vegetation never returned to its former density or diversity and the present day environment around Rezina marsh with its heavily eroded slopes supporting only herbaceous vegetation was probably initiated during this time.

Present vegetation is characterized by a great diversity with representation of 18 types of biotopes, mentioned in the list of the Natura 2000, the network of special areas of conservation in EC according to the "Habitats Directive"

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(92/43/EEC), some of which are rare in national terms, e.g. Eastern Mediterranean screes, or at international level, e.g. Mediterranean pine forests with endemic Mesogean pines and stinking juniper (*Juniperus foetidissima*) woods (Chandlidou, 1999).

Moreover the area is one of the most important in Greece for its flora. 831 taxa (species and subspecies) have been found in the broader area of Zagori, 202 of which are endemic at the local, national or Balkan level or they are under protection according the national or international legislation (e.g. Red Data Book of IUCN, Berne Convention) (Chandlidou, 1999). In particular in the land of Papigo occur 4 of the 6 local endemic taxa of Zagori (*Silene pusilla tymphaea*, *Hieracium dasycraspedum*, *Hieracium neopinum* and *Galium sacorum*) and 12 of the 35 Greek endemic taxa that also occur in Zagori (Chandlidou, 1999).

The fauna of the area is also diverse (24 species) including brown bear (*Ursus arctos*), wolf (*Canis lupus*), wild boar (*Sus scrofa*), otter (*Lutra lutra*), chamois (*Rupicapra rupicapra balcanica*) and an unconfirmed sighting of lynx (*Lynx lynx*).

In addition, 96 bird species have been observed in the area, including three of the four species of vultures occurring in Greece (*Gypaetus barbatus*, *Gyps fulvus*, *Neophron percnopterus*), 12 species of raptors and species with restricted distribution in Europe such as *Sitta neumayer* and *Tichochroma muraria* (Schmid & Reichenecker, 1998; Tsiakiris, 1999;).

Finally, the area supports 10 species of amphibians and 20 species of reptiles. Of most importance is the presence of the alpine newt (*Triturus alpestris*) in isolated small populations in the alpine zone of Papigo (Papaioannou, 1999).

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3.3 Ethnography

Zagori is unique in Greece both for its landscape and for the history and prosperity of its settlements during the past centuries. The privileges that the inhabitants enjoyed during the years of the Turkish occupation (1453 – 1912) in combination with repatriation resulting from emigration, principally to Egypt, Central Europe and Asia Minor, made a large contribution to the economic prosperity of the area. This began as back as in the 12th century, but from the middle of the 18th century the rhythm of emigration quickened with obvious effects on the economy of the villages (Stamatopoulou, 1998; Campbell, 1964).

In the middle of the 19th century Zagori had 27,027 inhabitants (Labridis, 1889). After the 1912-1913 –when the industrial revolution in Europe dealt a severe blow to the Greek settlements there- the population started to decline, and by 1921 the population stood at 8,129 people (Stamatopoulou, 1998).

Moreover, during the period of the Second World War the villages were abandoned by their few remaining inhabitants who were not to be lured back after they settled in the large towns of Athens and Ioannina and the population fell to 5,398 inhabitants in 1961 and it was only 3,740 in 1991 (Stamatopoulou, 1998; Nanouri & Tsiokanos, 1999).

Papigo in 1880 had 684 inhabitants in about 100 families (Papaioannou, 1986); this number followed the same decreasing trend as the rest of the area and by 1971 the population was 144 people. After 1980 a small increase that does not follow the trends in the rest of the area (decrease -9%) resulted from tourist development and by 1991 the population had risen to 183 people (Nanouri & Tsiokanos, 1999).

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Resident in the villages were Zagorians with other immigrant groups with Gypsies as a lower social strata. Moreover a nomadic population of transhumants (Sarakatsani) used also the area during the summer.

The practice of transhumance is a semi-nomadic system, which dates back at least to the Bronze Age and it is a common phenomenon in west and north continental Greece (Campbell, 1964), as well as in other parts of the Mediterranean (Blondel & Aronson, 1999; Aschmann, 1973). It consists of biannual movements of herds and flocks between a lowland area and a mountain area of contrasted climate. In the most widespread form 'ascending transhumance', flocks spend the autumn, winter, and spring in the lowlands, and move to the cooler mountain areas in summer, where pastures stay green and where drinking water is available (Blondel & Aronson, 1999).

From May until the first days of November, or as they calculated it between the feast-days of St. George and St. Demetrius which mark their seasonal migrations between plain and mountain, these semi-nomad shepherds graze their flocks on the higher slopes of the mountains where pastures stay green and where drinking water is available in summer, while during the remainder of the year they live in the coastal plains (Campbell, 1964).

Simple facts of climate and relief, snow on the high ground in winter coupled with summer burning heat in the plains encourage this transhumance. Moreover, as Gamila is the most important sheep grazing area of the Zagori, with abundant rain and limestone slopes producing a sparse but fine grass of excellent quality as the shepherds claim (Campbell, 1964) it is not surprising that within the study area are many people belonging to the nomadic tribe of Sarakatsani. Labridis (1889) mentions that 55,000 sheep were grazing the summer pasturelands of Papigo (Labridis, 1889), while today their number is only 3,000 animals.

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Since 1938 the majority of these shepherd families have enjoyed the same citizenship and grazing rights as the sedentary villagers of Zagori from whom previously they had to rent their pastures (Campbell, 1964).

3.4 Cultural landscape

Isolation by the mountainous terrain in epochs when transportation systems were limited had as a result a self sufficient life style at both family and village level based on the logic to utilise the full potential of the altitudinal range of the mountain environment (Crötzbach & Stadel, 1997).

Climatic reasons prevent the residents from to keep more animals apart from those which it was possible to keep under cover through the winter or inside the physically protected ravine and as the alpine pastures were generally empty the villagers were willing to rent large tracts of grazing land to Sarakatsani (Campbell, 1964).

Thus the vegetation zones mirror not only the land uses but also the ethnic groups that occur in different areas. The alpine zone of the summer pastureland corresponds to transhumants while the mix system with the crop cultivations, the orchards, the vegetable gardens and the pruned trees for fodder near the villages correspond to the resident population (Nitsiakos, 1998).

Except for the land uses relating to livestock, cultivation and transport structures (paths, bridges etc), human influence on the landscape include small worship points (temples) within the boundaries of the villages (Nitsiakos, 1998; Kyriakidou – Nestoros, 1989). These small temples define the smaller boundaries

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of the villages (surrounding the village) while the broader boundaries (surrounding the fields, pastureland etc) are defined with natural marks, some of which are also sometimes consecrated with the inscription of the symbol of cross civilizing the “wild nature” (Kyriakidou – Nestoros, 1989).

Although remains of former land use patterns still exist there is nowadays a overwhelming sense of abandonment in both the build environment and the wider countryside representing a significant loss of cultural landscape.

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4. METHODOLOGY

The selected methods include some of the participation techniques of RRA (Rapid Rural Appraisal), PRA (Participatory Rural Appraisal) and Participatory Forest Resource Assessment developed for community forestry in which field workers learn directly from or with local people (Carter, 1996, Jackson & Ingles, 1998). Such techniques are mostly used by organizations and institutions working to increase the participation of rural residents in conservation and they have been developed by researchers from a variety of different fields, such as anthropology (interviewing) and geography (map making) (Tuxill, & Nabhan, 1998).

A combination of qualitative (e.g. interviews) and quantitative (e.g. scoring) tools, described below, were used in order to keep a balance between objectivity and the detail necessary in order to built up an accurate picture of the situation in the village.

The different tools were used as a way to verify or triangulate information. However in such studies objectivity is rather difficult to obtain as even the more quantitative tools are used in a context social interaction, and are influenced by it (Fontana & Frey, 1998)

4.1 Pilot study

At the beginning of the research some open ended interviews were used to check what was needed to be asked later, based on a checklist of topics and questions on general village information, e.g. location of administrative boundaries, type and location of farmland, cropping patterns and livestock husbandry practices, location names and condition of forests used by local people, big changes in land use, traditional management and conservation practices, places with special use, water management, relation with specific areas such as the ravine, the alpine meadows and the forests.

The details were recorded in a field book and they gave the general impression of the situation of the village and where the research should be directed.

4.2 Semi structured walks

Semi-structured walks as recommended by Tuxill & Nabhan (1998), are a combination of semi-structured interviews and direct observations undertaken during joint inspections with key informants or other knowledgeable local people in order to gain a first impression of the area and the way in which people use and appreciate it.

Nevertheless, in some of the attempts the semi-structure walks became direct observation of specific situations or activities first-hand as the people were often so busy and concentrated on their work that they had no time for speaking.

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4.3 Structured interviews and scoring of biotopes with the help of photographs.

In this exercise pictures were used to ensure that the interviewer and interviewee were referring to the same object (in this case particular biotopes). The pictures were presented as photographs to facilitate discussion with and collect information.

The method used is that described by Kaplan (1985), who used it to study the way by which the environment is experienced by people. His general idea was that preference measurement can serve as a method for the exploration of landscape perception by the general public.

From the participant's standpoint, the method consisted of viewing pictures, answering if they have visited each area, giving the reasons for visits and indicating for each one how much it was liked or preferred, using a 5 point rating scale. (Kaplan,1985).

The question of preference was divided into two parts: beauty and importance, while the interviewees were also asked to give the reasons for their preference. In addition the perception of the degree of recent change of the place was scored using the same 5 point scale as well as the reason for that change and if it was positive or not.

The pictures were placed in a table in front of the participant arranged according to the actual relationship between the biotopes themselves, i.e. higher altitude biotopes above forest pictures, with the intent to give the whole image of the place and just focus in some of its characteristic elements. Biotopes mentioned in the list of the Natura 2000 were mainly used along with places where traditional

A METHODOLOGY

The research involves a number of the participants' activities of RIA. (Open-ended questions, IAA (Interviews, Focus Groups) and Participatory Action Research) designed for community forestry in their field. (Carter, 1996; Jackson & Jagers, 1996). Such activities are mostly used by organizations and institutions working in the field of community forestry in conservation and development. (Carter, 1996; Jackson & Jagers, 1996). (Interviewing and focus groups) (Troll & Nelson, 1997).

A combination of qualitative (interviews) and quantitative (eg. survey) tools described below were used in order to establish a balance between objectivity and the field researchers' views on the nature of the situation in the field.

The different tools were used in a way to verify or to complement the data. However, in such studies of activity in order to obtain a more comprehensive picture of the situation, and the role of the participants in the field, it is necessary to use a variety of different tools, such as anthropology (Troll & Nelson, 1997).

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land use practices used to take place, or they are still in use and places used intensively the last years as tourist attractions (see Diagram 1).

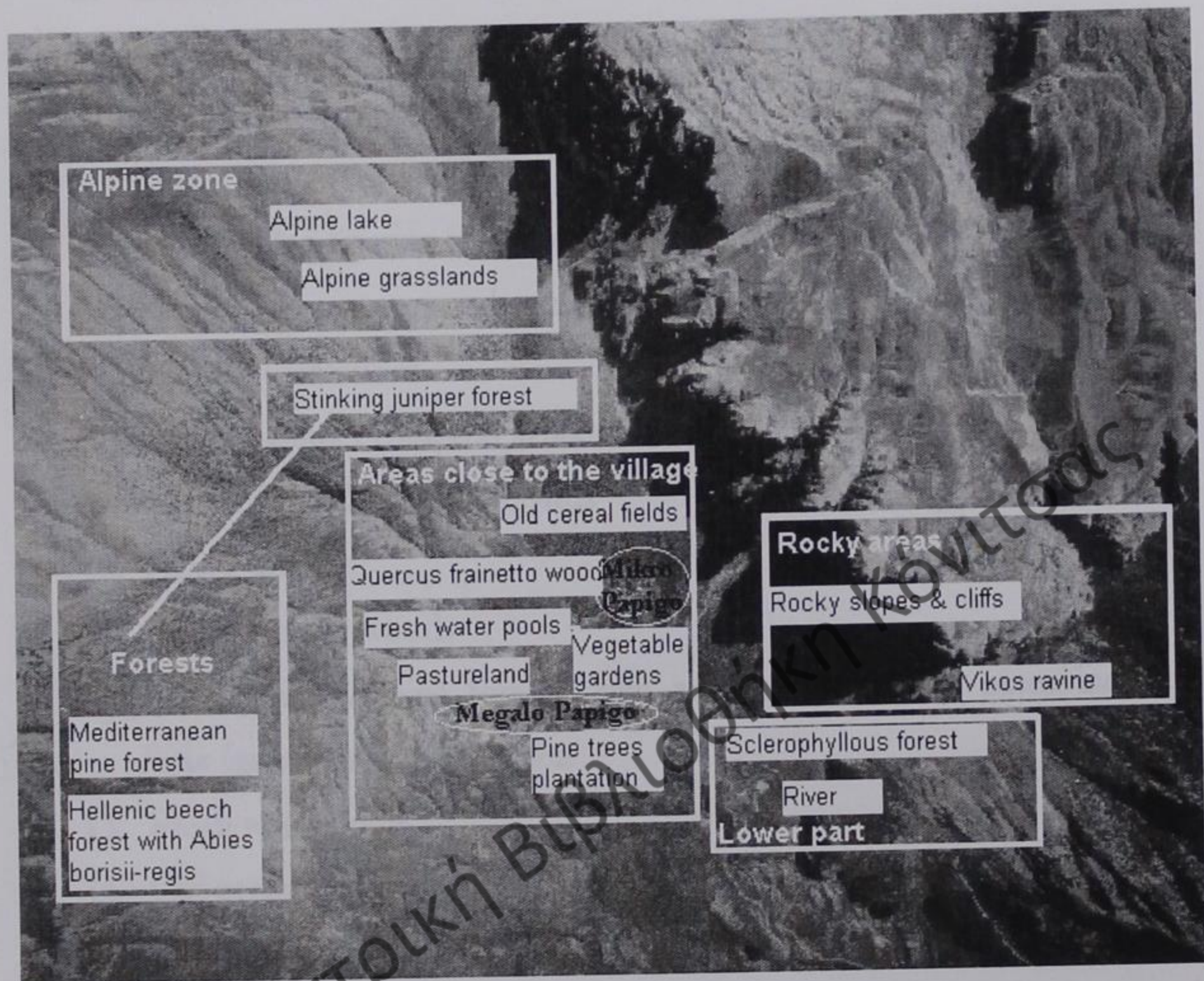


Diagram 1: Placement of the pictures used in photograph scoring and paired comparisons on the aerial photograph of the area. In both exercises pictures were placed in a table in front of the participant arranged according to the actual relationship between the biotopes themselves as is showed in the diagram.

The order by which the photographs were asked to be scored by participant was randomized as recommended by Martin (1995): Numbers were assigned to each photograph according to the alphabetical order of their names, these numbers were written on slips of paper and the slips pulled out of a hat. Finally the pictures were presented as follows (see Appendix 1 for photographs):

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1. Alpine calcareous grasslands
2. Sclerophyllous forests with *Quercus coccifera*
3. Rocks with slopes, Balkan screes and narrow meadows between them
4. Pine trees plantation
5. Ravine
6. River, with a riparian forest of oriental plane woods (*Platanion orientalis*)
7. Pastureland, overgrazed areas with *Juniperus communis* and *Juniperus oxycedrus* formations
8. Stinking juniper (*Juniperus foetidissima*) woods
9. Vegetable gardens and orchards
10. Alpine lake
11. *Quercus frainetto* woods
12. Mediterranean pine forests, with endemic Mesogean pines including *Pinus leucodermis* and *Pinus nigra*
13. Fresh water pools
14. Old cereal fields
15. Hellenic beech forests with *Abies borisii-regis*.

Care was paid to the quality of the photographs and to their number trying to keep a balance between the time needed for the exercise and the biotopes examined. A pilot study was used to evaluate the quality, as well as the items and some changes were done after that (e.g. the photo of the river was of an area out of the boundaries of the village and it was changed with another one and the fresh water pool was included after comments of the participants).

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4.4 Paired comparisons of group of biotopes

Paired comparisons as recommended by Martin (1995) and Jackson and Ingles (1998) are used to obtain information about local people preference about a variety of topics from preferred fruits and rating of the quality of various types of firewood (Martin, 1995) to identification of for example the most popular fodder trees grown locally (Jackson & Ingles, 1998).

For the purpose of this study paired comparisons were done for groups of biotopes according to their proximity and sameness (see Diagram 1). The photographs of the previous exercise grouped in 5 groups and the question to be asked was: "Which of these two areas do you like more?"

The five groups of biotopes were as follows:

1. Alpine zone: the lake and the alpine meadows.
2. Forests above the oak zone: juniper, pine and fir forest.
3. Areas close to the village: vegetable gardens, old fields, pine plantation, oak forest, fresh water pool, old fields.
4. Rocky areas: cliffs and the gorge.
5. Lower part of the area: sclerophyllus forest and the river.

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Table 1: The pairwise ranking matrix for the five groups of biotopes.

	Alpine zone	Rocky areas	Forests	Areas close to village	Lower part	Score	Rank
Alpine zone		Alpine zone	Alpine zone	Alpine zone	Alpine zone		
Rocky areas			Forests	Areas close to village	Rocky areas		
Forests				Areas close to village	Forests		
Areas close to village					Areas close to village		
Lower part							

The order of the ten in total comparisons of groups of biotopes was randomized by the same method as in the previous exercise, described by Martin (1995). Numbers were assigned to each group of photographs, these numbers were written on slips of paper and the slips pulled out of a hat. The sequence of the pairs was given by flipping a coin.

This exercise was used after the scoring of photographs in order to triangulate it and to group the biotopes in broader groups.

Table 2. The results of the analysis of variance for the effect of nitrogen

Source	df	MS	F	P
Replication	1	1.2	0.1	0.75
Treatment	3	1.8	1.5	0.22
Error	12	1.2		

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4.5 Short simple questionnaire

A short simple questionnaire in which the participant was asked to express his or her opinion about the national park, changes in society and nature and their ideas about the future of the area was also used.

4.6 Time

The length of the whole session (scoring, paired comparisons and questionnaire), allowing for introductions and greetings was timed at 45 minutes to one hour and exceptionally a little more in cases where there was a great personal interest in the subject, while we could say that the younger someone was the less time was needed. The one-hour limit is a good time for this kind of exercises as longer interviews become tiring and increase the risk of error (Nichols, 1991).

4.7 Cognitive or sketch maps and analysis of aerial photographs

The usual procedure to ask the villagers to draw a map of their village and its surrounding resources, -as recommended by Rocheleau (1995). Tuxill & Nabhan (1998); Jackson & Ingles (1998); and others- focusing on aspects of particular interest such as the use of forest products, livestock grazing patterns etc. was considered inappropriate because the sketches very quickly filled up with local information, especially tenorial names and histories.

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In addition an attempt was made to draw a map with permanent color pens on a photocopy of a real map but the nature of the area with its steep slopes and cliffs made the exercise impossible. Moreover it was not possible to concentrate many people together in order to make a participatory map and all the sketch maps were personal.

As an alternative, discussions about land uses took place over a 1:20,000 scale photocopy of an aerial photograph. While several studies have concluded that for discussions with local people the optimal scale of aerial photographs is 1:5,000 (Carter, 1996), the method worked pretty well. Nevertheless, in the very steep areas of the rocks, the aerial photographs were less useful due to distortions of the land area and the effect of shadow.

4.8 Stratification of sampling

The total sample size was 62 people representing 34 of the 53 of the families or households in both villages.

A stratified sample such that sub-groups or 'interest groups' to be included in the sample were defined from the beginning (age, gender, social group, occupation, residency). Moreover, some additional sociological variables were used to define lower level divisions such as origin of the family, marriage, education and length of time associated with the village (e.g. all life or after retirement).

The selection of interviewees was based on the chain, or snowball sampling method, a useful method for minority units (Nichols, 1991). In this procedure after a first contact with someone from one group he/she was asked to introduce

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other people who could fill certain criteria (e.g. transhumance man, between 50-70 years old who is still a shepherd).

Care was taken not to exclude less powerful groups from the research and to talk and interact with people from a range of different backgrounds and therefore from different viewpoints so as to represent the diversity of the community and to ensure that the silent majority which often includes women and children, the poor and other groups who have often been ignored by fieldworkers were included (Tuxill, & Nabhan, 1998; Martin, 1995). Women in particular are often overlooked when land use issues are being discussed, in spite of the fact that they are often the most and important users of forests and forests products (Slocum & Slayter, 1995; Jackson & Ingles, 1998).

4.8.1 Age

The population was grouped into four age classes:

- ≥75 years
- 50 – 74 years
- 30 – 49 years
- <30 years

'Elders' were recognized as 75 years or over because people were often still working until that age. Correspondingly people less than 30 were classed as the youngest age class, while the absence of families with young children (less than 20) as a consequence of lack of school in the whole area was obvious.

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4.8.2 Social group

The group was also split into three main categories according to their relation to the village: newcomers who came recently to work with tourist or to live in the village, transhumants who use the place as summer pastureland and locals in terms that they are originate from the village or they are related to it through marriage.

Despite the fact that more and more young transhumants, specially men reside in the village all the year round, they were considered as transhumants firstly because this situation is recent (2 - 10 years) and because of the social structure of this particular group in which the extended form of the family is still alive.

People who originate from the village but live in town and use the village as holiday place were not included in the research because the data collection period was not the same as their holiday period. On contrary people who live in the near by town (60km) and visit the village frequently were included in the 'newcomers', or the 'locals' group respectively.

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Table 2: Number of participants grouped by primary strata/ classification: The total sample (64 individuals) divided in the main subgroups (gender, social group, age class). Numbers were taken proportionally to the population size that was calculated from municipal catalogues and with the help of local people.

Age class		Locals		Transhumans		Newcomers	
		Participants	Total	Participants	Total	Participants	Total
>75	Males	3	4	2	2	-	-
	Females	8	15	-	1	-	-
50-74	Males	4	11	3	9	1	3
	Females	10	20	2	3	2	4
30-49	Males	6	11	2	4	3	6
	Females	3	6	2	3	1	2
<30	Males	1	2	4	10	-	-
	Females	1	2	1	1	1	2
Total		38	71	16	33	8	17

Moreover, some people like village 'elders' who are very knowledgeable about land and whom could be characterized as key informants were interviewed in order to provide specific information about special issues.

Although the total sample, used in the quantitative part of the study was 62 people there are some small differences in the numbers of people who took place in the paired comparisons (59 persons) and scoring of the photographs (57 persons). Some of them were not happy in the paired comparisons to select between the places saying that they consider the area as a whole ecosystem, while others did the paired comparisons but they had no time to finish the exercises. In addition there was one case in which someone gave fictitious accounts in order to contradict what other people had said in the scoring exercise and his answers were not included in the analysis.

Table 2. Number of participants grouped by primary school classification. The total sample for each school is listed in the first column. Gender ratio (male/female) and the number of participants in the experimental and the control groups (from general education and from the high school group) are listed in the second and third columns, respectively.

School	Total	Experimental		Control	
		Male	Female	Male	Female
1st	10	5	5	5	5
2nd	10	5	5	5	5
3rd	10	5	5	5	5
4th	10	5	5	5	5
5th	10	5	5	5	5
6th	10	5	5	5	5
7th	10	5	5	5	5
8th	10	5	5	5	5
9th	10	5	5	5	5
10th	10	5	5	5	5
11th	10	5	5	5	5
12th	10	5	5	5	5
13th	10	5	5	5	5
14th	10	5	5	5	5
15th	10	5	5	5	5
16th	10	5	5	5	5
17th	10	5	5	5	5
18th	10	5	5	5	5
19th	10	5	5	5	5
20th	10	5	5	5	5
21st	10	5	5	5	5
22nd	10	5	5	5	5
23rd	10	5	5	5	5
24th	10	5	5	5	5
25th	10	5	5	5	5
26th	10	5	5	5	5
27th	10	5	5	5	5
28th	10	5	5	5	5
29th	10	5	5	5	5
30th	10	5	5	5	5
31st	10	5	5	5	5
32nd	10	5	5	5	5
33rd	10	5	5	5	5
34th	10	5	5	5	5
35th	10	5	5	5	5
36th	10	5	5	5	5
37th	10	5	5	5	5
38th	10	5	5	5	5
39th	10	5	5	5	5
40th	10	5	5	5	5
41st	10	5	5	5	5
42nd	10	5	5	5	5
43rd	10	5	5	5	5
44th	10	5	5	5	5
45th	10	5	5	5	5
46th	10	5	5	5	5
47th	10	5	5	5	5
48th	10	5	5	5	5
49th	10	5	5	5	5
50th	10	5	5	5	5

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Although the total number of participants in the experimental and control groups was the same, there were some differences in the number of participants in each school. The total number of participants in the experimental group was 100 and in the control group was 100. The number of participants in each school is listed in the first column of the table. The number of participants in the experimental and control groups in each school is listed in the second and third columns, respectively.

5. ANALYSIS

5.1 Coding

The data were entered into databases using Microsoft Access. The responses of “why” were coded and categorized before being interpreted (Martin, 1995). The categories of reasons for visits, beauty, importance and change are given in Tables 2-5, while all the original answers are listed in the appendix.

5.1. 1 Reasons for visits

The reasons for visits are listed in Table 3.

Table 3: Categorization of the reasons of visits:

Visit code	Description
CNTFPGR	Collection of fodder and foliage fodder, relating to livestock
CT	Collection of fuelwood, timber, bark
CNTFP	Collection of wild fruits, non vascular plants and other products e.g. honey, mushrooms, vulture feathers
GR	Grazing (sheep, goats, cows)
CU	Cultivation of the land
ED	Every day activities
H/F	Hunting, fishing
R	Recreation
S	Social life
T	Work relating to tourist
W	Way to go to another place, passage
CA	Casually

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5.1.2 Beauty

Beauty factors were divided into three main categories related to landscape character, landscape distinctiveness and scenic beauty each of which was divided into subcategories (see Table 4).

Landscape character (CH) was considered as a particular combination of natural (physical and biological) and cultural factors that make one place different from another focusing more on the nature of the land, rather than the response of the viewer (Kaplan, 1985; Warnock & Brown, 1998).

Scenic beauty or aesthetic pleasure (P), by contrast was a measure of the aesthetic appeal that a person experiences when viewing a particular scene and it was related to the aesthetic qualities of the landscape, but also to personal and cultural associations, familiarity with an area etc. (Appleton, 1994; Warnock & Brown, 1998; Aoki 1999).

Distinctiveness and condition were considered together as **distinctiveness of the landscape (DI)**, as people described condition in terms of uniqueness in comparison to other places.

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Table 4: Categories of beauty.

Broad category	Beauty code	Description
CH	CH	Landscape character: a pattern, resulting from particular combinations that make one place different from another.
CH	Cu	Cultural factors that contribute on the landscape character
CH	Na	Biological factors (wildlife)
CH	Ng	Physical factors (geology)
CH	Nt	Physical factors (topography)
CH	Nv	Biological factors (vegetation)
P	Pv	Visual dimension: aesthetic qualities
P	Pf	Personal associations: feelings
P	Pm	Personal associations: moral
P	Po	Personal associations: the opinion of others
P	Ps	Personal associations: symbolic
P	P	Perception, or scenic beauty: the aesthetic appeal which a person experiences when viewing a particular scene + personal associations, familiarity, culture etc
DI	CO	Landscape condition: something that can change more rapidly than the landscape character due to the impact of external factors
DI	DI	Distinctiveness

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5.1.3 Importance

Factors likely to influence the individual's perception about local environment in importance terms were divided in to recognized categories outlined in Table 5 (e.g. Blunden & Curry, 1990; Plotkin, 1995; Cotton, 1996; Kellert, 1996; Manning et al., 1999; Sochaczewski, 1999).

Table 5: Categories of importance.

Importance code	Description
E	<u>Ecological</u> : ecosystem functions and services; emphasis on biophysical patterns (e.g. vegetation, flora, wildlife), structures and quality of nature
N	<u>Naturalistic</u> : experience that people obtain from the direct experience of nature and wildlife (e.g. recreation, hunting, access to a place)
H/C	<u>Historical</u> : relating to traditional way of life or with the history of their ancestors
P	<u>Personal</u> : individually based factors, relating to memories and experiences and to internal influences such as personal ambition or temperament
SP	<u>Spiritual</u> : the opportunity to get closer to God or obtain other spiritual meaning through contact with nature
SC	<u>Scientific</u> : opportunities to study nature or ecology
U	<u>Utilitarian</u> , economic or material benefit derived from exploiting nature
AE	<u>Aesthetic</u> : Emotional experience due to visual elements of the landscape
S	<u>Social</u> : relating to social norms and to what is likeable or acceptable by others, specially when these others are the prevalence
M	<u>Moral</u> , ethical

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5.1.4 Change

Finally, the reasons for change were categorized as outlined in Table 6.

Table 6: Categories of change.

Change code	Description
CL	Climatic changes, e.g. less water or snow and their consequences
D	Degradation to environmental quality, mainly as a consequence of tourism
PR	Positive or negative changes due to conservation efforts or due to lack of protection and places that have become vulnerable: in danger to be destroyed and thus they need protection
S	Changes in social structures and organization
T	Technical works
U	Lose of property, or past commodities due to land use change
VF	Valuable, recognised by "others"
W	Changes to wildlife, decreases and increases in numbers and species
PH	Physical and natural changes, due to seasonality, time
A	Abandonment of cultivation and livestock activities
F	Reforestation and recovery of wild vegetation as a consequence of abandonment

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5.2 Statistical tests

Data were analyzed using the SPSS statistical program.

Analysis of variance (one-way ANOVA) was applied to the scores to compare the means of different biotopes for different sub-groups of people according to the number of visits, perceived beauty, importance and change.

In addition the chi-square test for contingency tables were used in order to see how the scores were distributed between different biotopes and to test the frequencies of occurrence of different reasons in different biotopes or sub groups of people (Zar, 1974).

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6. RESULTS

6.1 Paired comparisons for groups of biotopes

6.1.1 Whole sample reference for paired comparisons

The results of the analysis of the pairwised comparisons are showed in table 7.

Table 7: Results of the pairwise ranking matrix for the five groups of biotopes.

	Alpine zone	Rocky areas	Forests	Areas close to the village	Lower part	Means	Rank
Alpine zone		Alpine zone	Alpine zone	Alpine zone	Alpine zone	2.305	A
Rocky areas			Forests	Areas close to the village	Rocky areas	1.889	D
Forests				Areas close to the village	Forests	1.957	C
Areas close to the village					Areas close to the village	1.889	B
Lower part						1.754	E

The alpine meadows were ranked first in the rank and the river last but the differences between the five groups of biotopes were not statistically significant (One way ANOVA, $p > 0.05$).

However, by splitting the main group into subgroups some statistically significant differences appeared.

6.1.2 Subgroups reference for paired comparisons

Men and women differed significantly in their preferences. Men preferred the alpine areas more than women and women showed a stronger preference for areas close to the village (One way ANOVA, $p < 0.01$).

Older people (over 50) showed a strong preference for areas close to the village (One way ANOVA, $p < 0.01$) while **young** people's preference was for the alpine areas (One way ANOVA, $p < 0.05$).

Moreover, significant differences in the group of biotopes that different **social groups** preferred appeared. Transhumants showed a preference for the alpine areas (One way ANOVA, $p < 0.05$) and the river (One way ANOVA, $p < 0.05$) and a dislike for the area close to the village. In contrast, the area close to the village was ranked highest by the locals (One way ANOVA, $p < 0.01$) and the river the least. Newcomers evaluated the alpine zone highest, after the river and the area near the village lowest.

More comparisons were done according to other characteristics of the population (e.g. inhabitants of the two villages, education etc), or subdivisions of the main groups (e.g. locals according to gender etc). It was found that social group, gender and age class were always important (e.g. people without education were always transhumant women, or the difference between the two villages was due to the transhumants who live only in one of the two villages). For this reason it was decided to consider only three categories: gender, social group and age in the rest of the analysis.

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6.2 Photograph scores for biotopes

6.2.1 Visits

The research showed that all places pictured were well visited (see Figure 1).

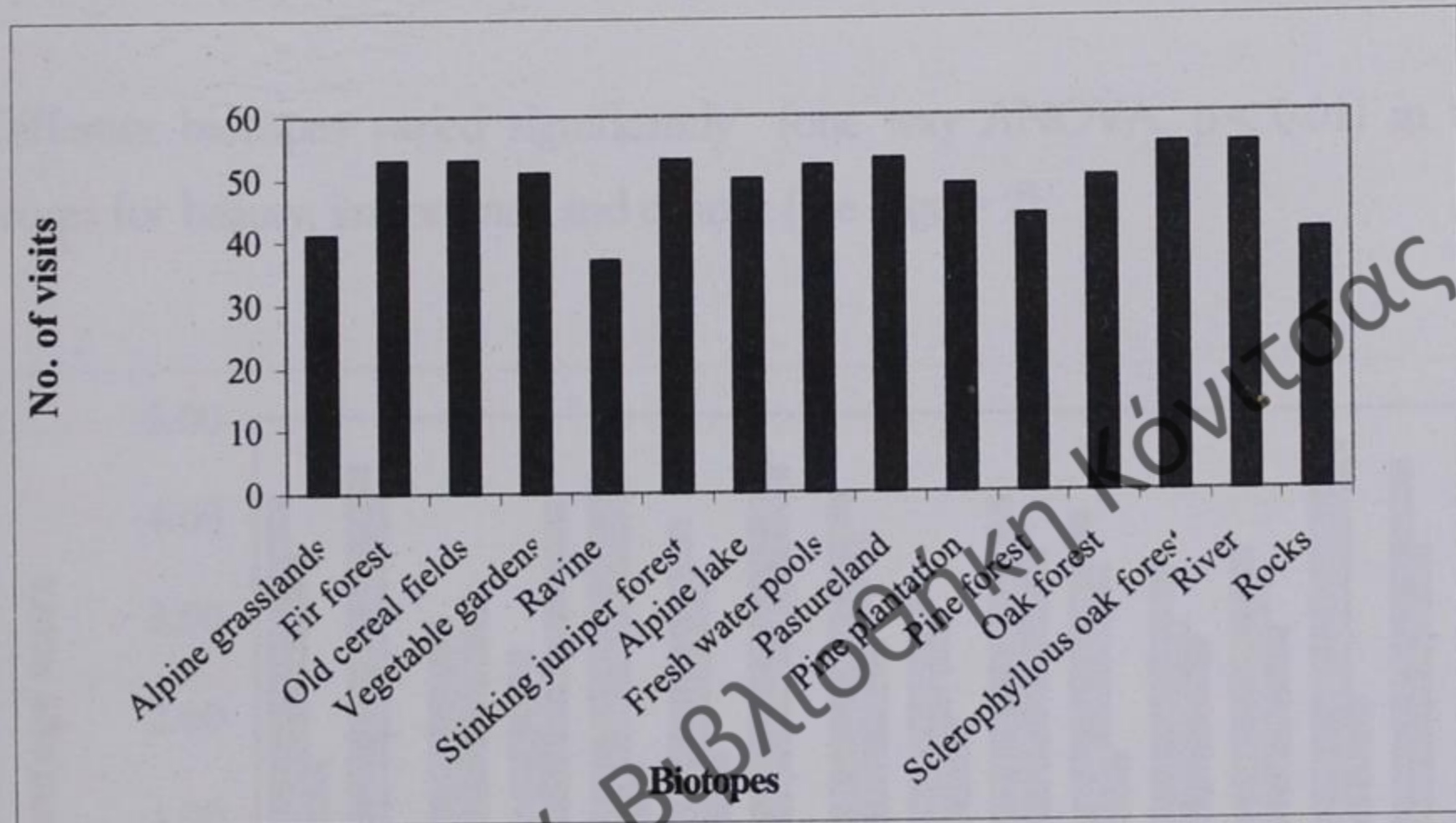
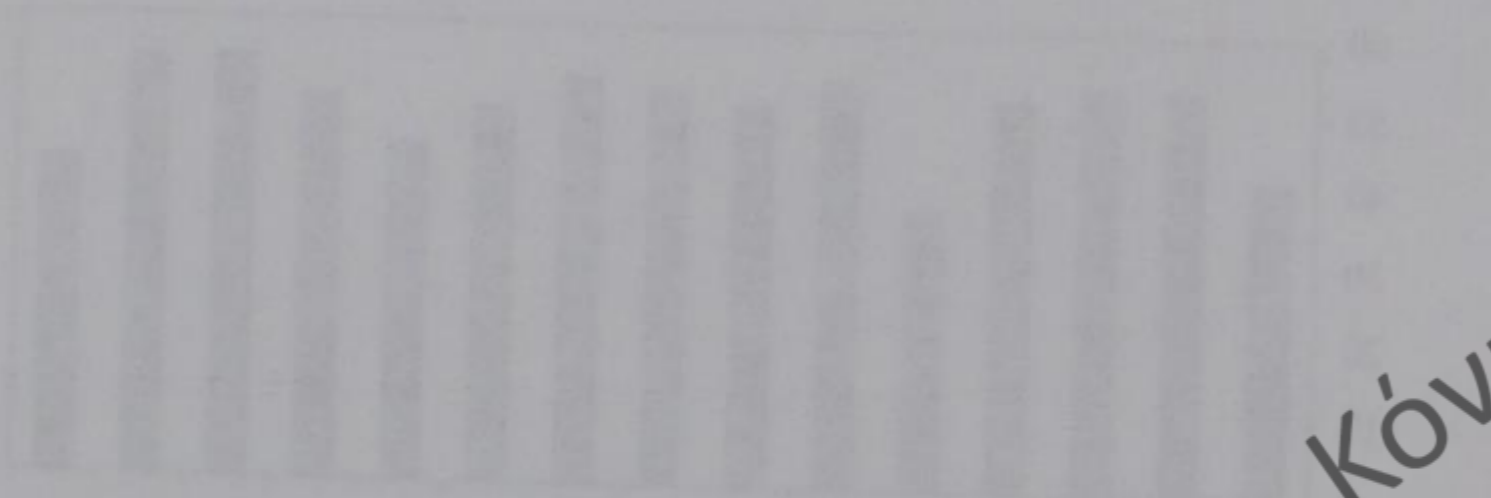


Figure 1: Frequency of visits in each of the biotopes

Places close to the village (oak forest, pastureland, old fields), as well as the river over which the road that links the village with the nearest town crosses are the most visited. Moreover, places that constitute tourist attractions, e.g. the alpine meadows close to the mountain refuge hut and the juniper forest close by, which was intensively used in the past for the collection of fodder during winter were also well visited.

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The less visited places were those that were either far away, on the boundaries of the village such as the fir forest, or are steep and dangerous. The place that combined both these characteristics, the gorge, was the least visited place.

6. 2.2 Perceptual scores for beauty, importance and change

Different biotopes varied significantly (one way ANOVA, $p < 0.01$) in their scores for beauty, importance and change (see Figure 2).

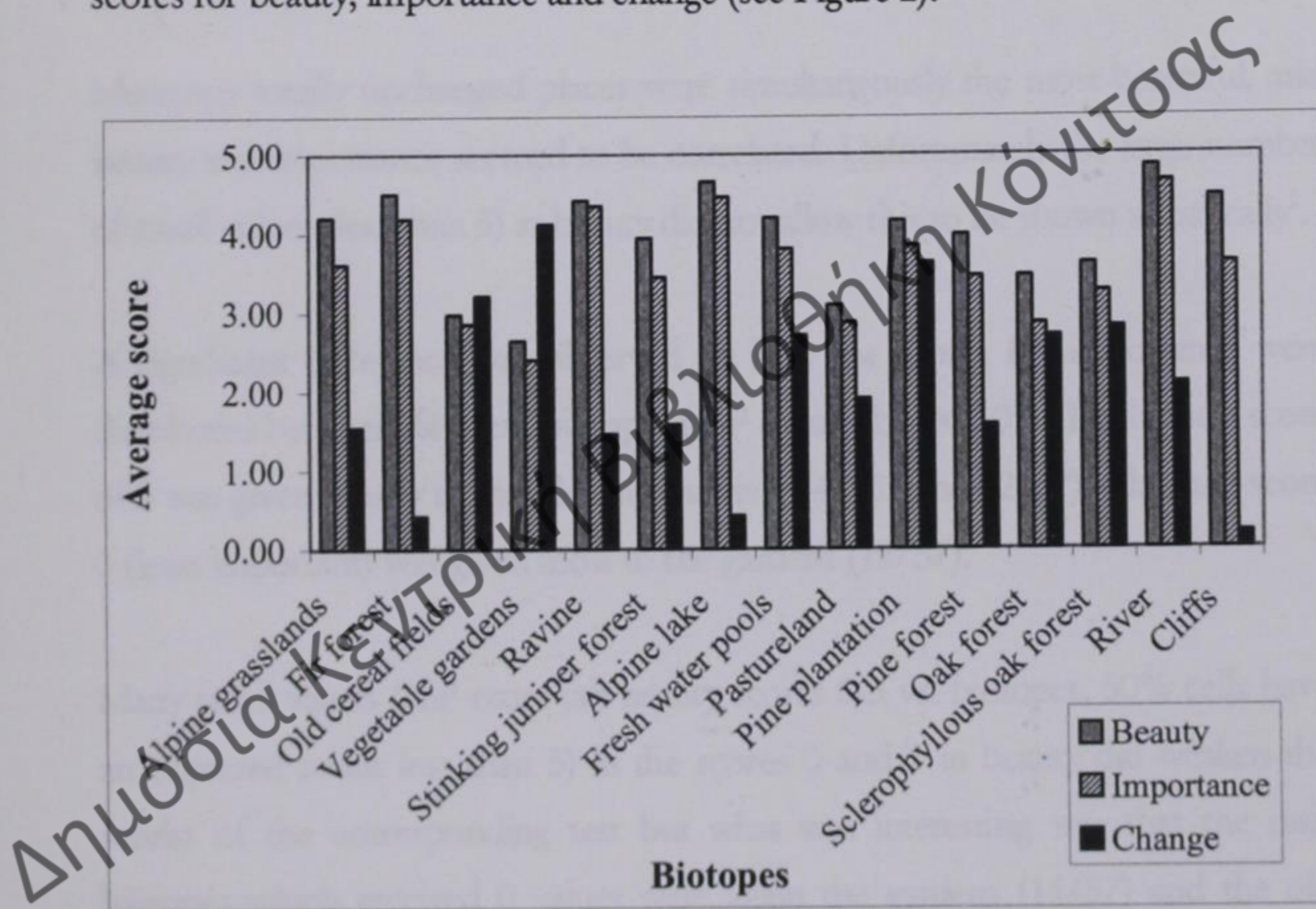


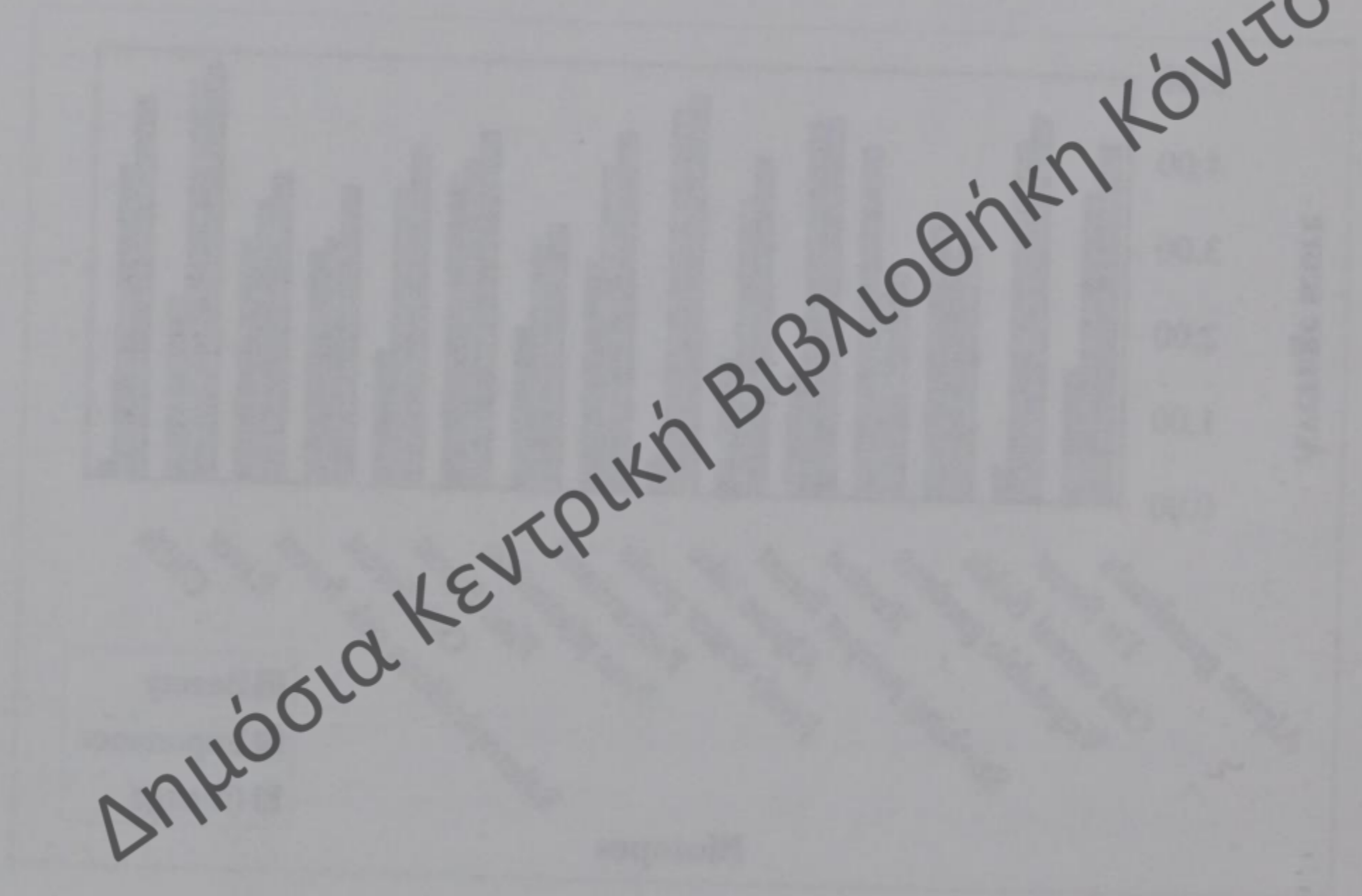
Figure 2: Average scores for importance, beauty and change in each of the biotopes.

The most beautiful places (river, lake, alpine meadows, cliffs and the gorge) were also the most important. Similarly the less beautiful places (gardens, old fields and the pastureland) were the least important.

The last word figure was shown and then the words in the position of the village were shown in the front of the page and the page was compared with the other words in the figure and the last word was

Figure 2.11. Perceptual scores for lexical experiment and change

Different groups were compared (see also ANOVA, $F(2,20) = 10.0$, $p < 0.01$) for scores for lexical experiment and change (see Figure 2).



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Figure 2.12. Perceptual scores for lexical experiment and change (see Figure 2)

The next lexical figure was shown and then the words in the position of the village were shown in the front of the page and the page was compared with the other words in the figure and the last word was

Areas closest to the village (gardens, old fields and the pine plantation) were the most changed places, followed by the deciduous and broadleaved oak forests and the fresh water pools. The most stable biotopes were rocky areas, alpine meadows and the lake.

Comparing the scores (0-5) for importance and change, a high statistically significant difference appears (χ^2 cross tab, $p < 0.01$), which supports the hypothesis that totally unchanged places were the most important.

Moreover totally unchanged places were simultaneously the most beautiful, and beauty and importance seemed to be correlated. Unfortunately the large number of small values (less than 5) in beauty did not allow this to be shown statistically¹.

A significant difference was observed on how the scores for importance were distributed between different biotopes (χ^2 cross tab, $p < 0.01$). The highest score of 5 was given mostly to the lake and the river (43/57 and 42/57), while the score 0 (least important) was given most to the gardens (18/57).

Many small values (χ^2 cross tab beauty scores 0-5 vs. biotopes, 50% cells have an expected count less than 5) in the scores 0 and 1 in beauty did weaken the results of the corresponding test but what was interesting was that the only biotopes which received 0 values were again the gardens (14/57) and the old fields (9/57). These biotopes were the only ones for which people were willing to express a score for beauty and importance in the past and compare it with the

¹ The chi-square analysis of contingency tables can be employed only if the expected frequencies in any cell are >1 , or >5 in more than the 1/50 of its cells (Zar, 1974) or if the average expected frequency is at least 6.0 when testing with α as small as 0.05 (Zar, 1996).

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present situation. Nevertheless, the number of these 'past scores' for beauty and importance were small in order to permit any statistical testing (χ^2 cross tab past beauty vs. present beauty, 95% of the cells had expected values less than 5; χ^2 cross tab past importance vs. present importance, 94.4 % of the cells had expected values less than 5).

Twenty-three people described this difference between past and present scores; 19 (83%) were locals while 18 (95%) of them over 50 years old.

Vegetable gardens received the most 5 scores for change (38/57) and the pine plantation came just after (30/56), while the biotopes which received the most 0 grades were the rocks (49/56), the lake (42/52) and the alpine meadows (41/50) (χ^2 cross tab biotopes vs. change scores 0-5, $p < 0.01$). The number of answers is different because some of the informants were unable to express an opinion about places last visited long ago.

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6.3 Photograph scores for gender, age class and social groups

6.3.1 Visits

There was no significant difference in the areas visited by different subgroups of people (One way ANOVA, $p > 0.05$). Nevertheless, as expected the oldest people had visited more places than the youngest (χ^2 cross tab, $p < 0.01$). Locals had visited many more places than the transhumants and these more than the newcomers (χ^2 cross tab, $p < 0.01$). There was no difference between men and women.

6.3.2 Perceptual scores for beauty, importance and change for all biotopes together

Newcomers, locals and transhumants varied significantly (one way ANOVA, $p < 0.01$) in the way they perceived beauty, importance and change (see Table 8).

Table 8: One way ANOVA for means of perceptual scores for social groups

Social groups	Means			P- Value
	Beauty	Importance	Change	
Newcomers	4.191	4.029	1.692	**
Locals	4.001	3.591	2.174	**
Transhumants	3.587	3.180	1.901	**

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Group	Mean	SD	n
Transferrin	1.12	1.10	101
Albumin	1.21	1.14	97
Neutrophils	1.11	1.12	98
Group	1.10	1.10	101

Women, young people and newcomers generally scored **beauty** higher, while transhumants gave it the smallest value. People over 50 gave it a slightly lower value than younger ones (see Table 9).

Table 9: One way ANOVA for mean scores for beauty

BEAUTY		Means	P- Value
Gender	Women	4.045	*
	Men	3.820	
Age class	>75	3.915	*
	50-75	3.823	
	30-50	4.189	
	<30	4.000	
Social group	Newcomers	4.191	**
	Locals	4.001	
	Transhumants	3.587	

Importance was scored highly by newcomers while transhumants gave lower values (see Table 10). People less than 50 years old scored the place more valuable than older people. There was no significant difference in scoring for importance between people according to gender.

Table 10: One way ANOVA for mean scores for importance

IMPORTANCE		Means	P- Value
Age class	>75	3.412	**
	50-75	3.400	
	30-50	3.949	
	<30	3.885	
Social group	Newcomers	4.029	**
	Locals	3.591	
	Transhumants	3.180	

Figure 10. The mean number of visits per house per day for each of the 10 houses in the study. The mean number of visits per house per day for each of the 10 houses in the study is shown in Table 10.

Table 10. The mean number of visits per house per day for each of the 10 houses in the study.

House	Mean number of visits per house per day
1	1.0
2	1.2
3	1.5
4	1.8
5	2.0
6	2.2
7	2.5
8	2.8
9	3.0
10	3.2

The mean number of visits per house per day for each of the 10 houses in the study is shown in Table 10. The mean number of visits per house per day for each of the 10 houses in the study is shown in Table 10.

Table 11. The mean number of visits per house per day for each of the 10 houses in the study.

House	Mean number of visits per house per day
1	1.0
2	1.2
3	1.5
4	1.8
5	2.0
6	2.2
7	2.5
8	2.8
9	3.0
10	3.2

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Change received the lowest values in comparison to beauty and importance (see Table 8). Older people and locals scored the place significantly higher for change than newcomers (see Table 11). There was no significant difference in the scoring for change between men and women.

Table 11: One way ANOVA for mean scores for change

CHANGE		Means	P-Value
Age class	>75	2.395	**
	50-75	2.274	
	30-50	1.819	
	<30	1.142	
Social group	Newcomers	1.692	**
	Locals	2.174	
	Transhumants	1.901	

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Change in total fat mass in comparison to body and movement (see Table 8). Older people and those with the least significant changes in movement (see Table 1). There was no significant difference in the change for change between men and women.

Table 10. ANOVA for movement for change

Age class	Mean	F-value
65	1.02	1.02
55-64	1.04	1.04
45-54	1.07	1.07
35-44	1.12	1.12
25-34	1.02	1.02
15-24	1.14	1.14
15-24	1.01	1.01

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6.4 Reasons for preferences

6.4.1 Visits

Recreation was the main reason given for visiting places as even the oldest had visited at least once the “hot spots” of the area, some of them when they were at school and they liked to talk about these excursions (see Figure 3). Visits relating to grazing and collection of a variety of non vascular plants such as mountain tea, or hazel nuts came next, followed by various other reasons.

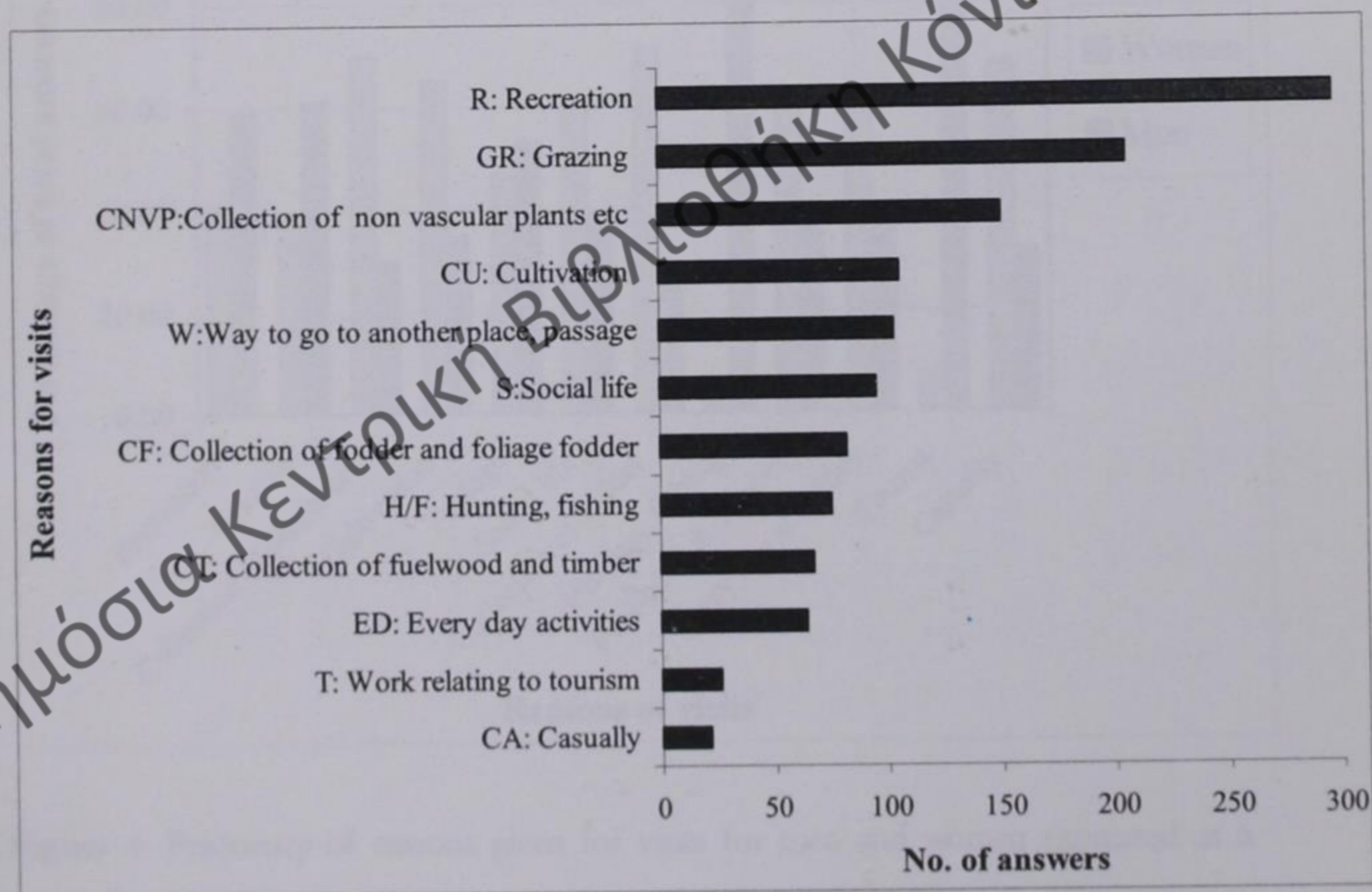


Figure 3: Reasons for visits for the sum of biotopes and people.

6.4.1 Visit

Patients were the main reason given for visiting their GP in the study. They visited a GP on the "hot days" of the study more often than they did on a school day and they tended to visit their GP more often than they did on a day when they were not working. The number of visits was higher on a day when they were not working than on a day when they were working. The number of visits was higher on a day when they were not working than on a day when they were working.

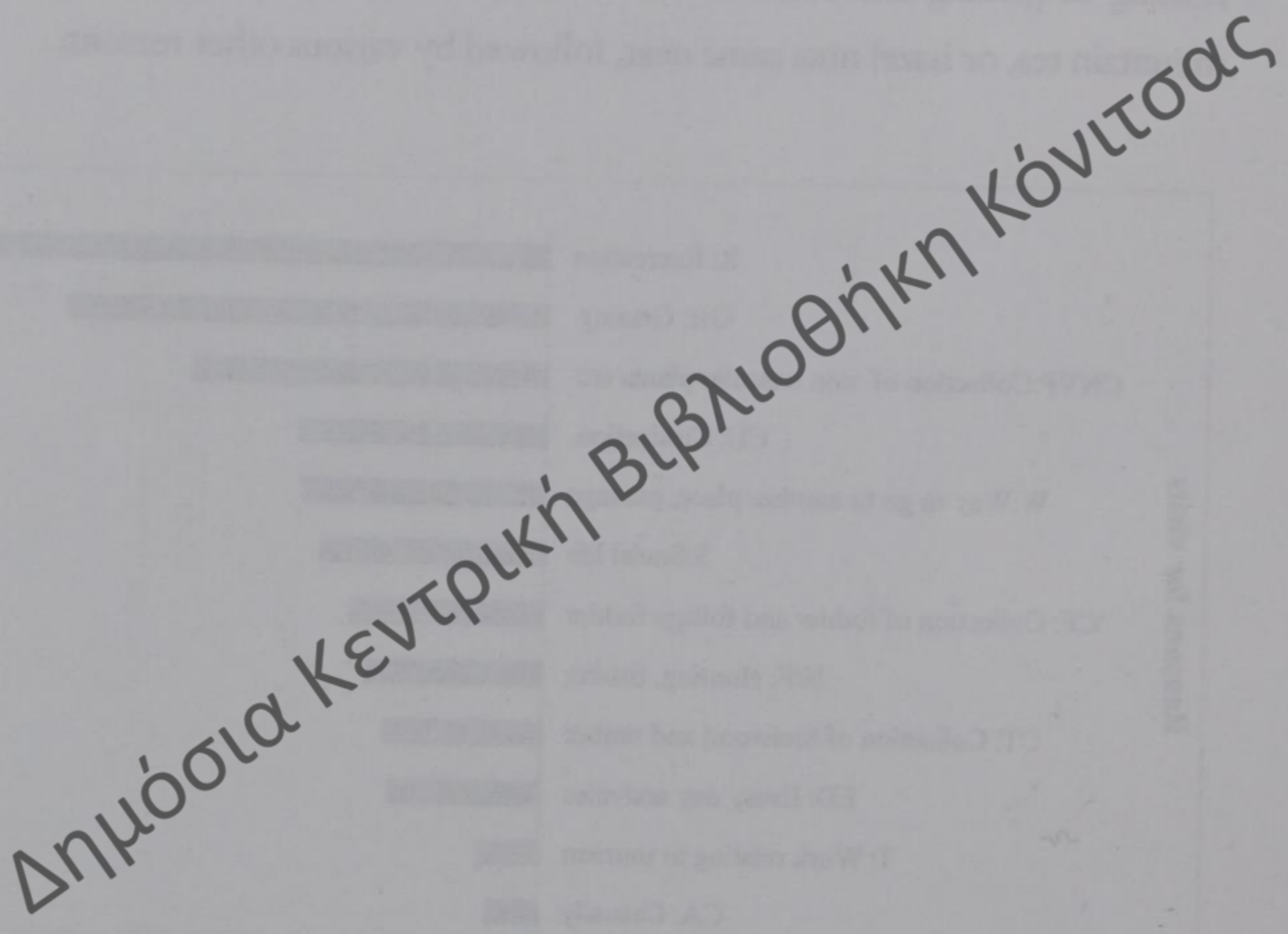


Figure 3: Reason for visit for the use of health and people.

6.4.1.1 Gender

Women were occupied with most of the activities (collection of fodder, fuel wood, non timber products, cultivation, every day activities) and participated more in social life (see Figure 4). Men participate more in grazing -although it is the transhumant men that make the difference. Men also spend more time in recreation. Hunting and fishing as well as occupation with tourism would appear to be predominantly a male occupation (χ^2 cross tab, $p < 0.01$).

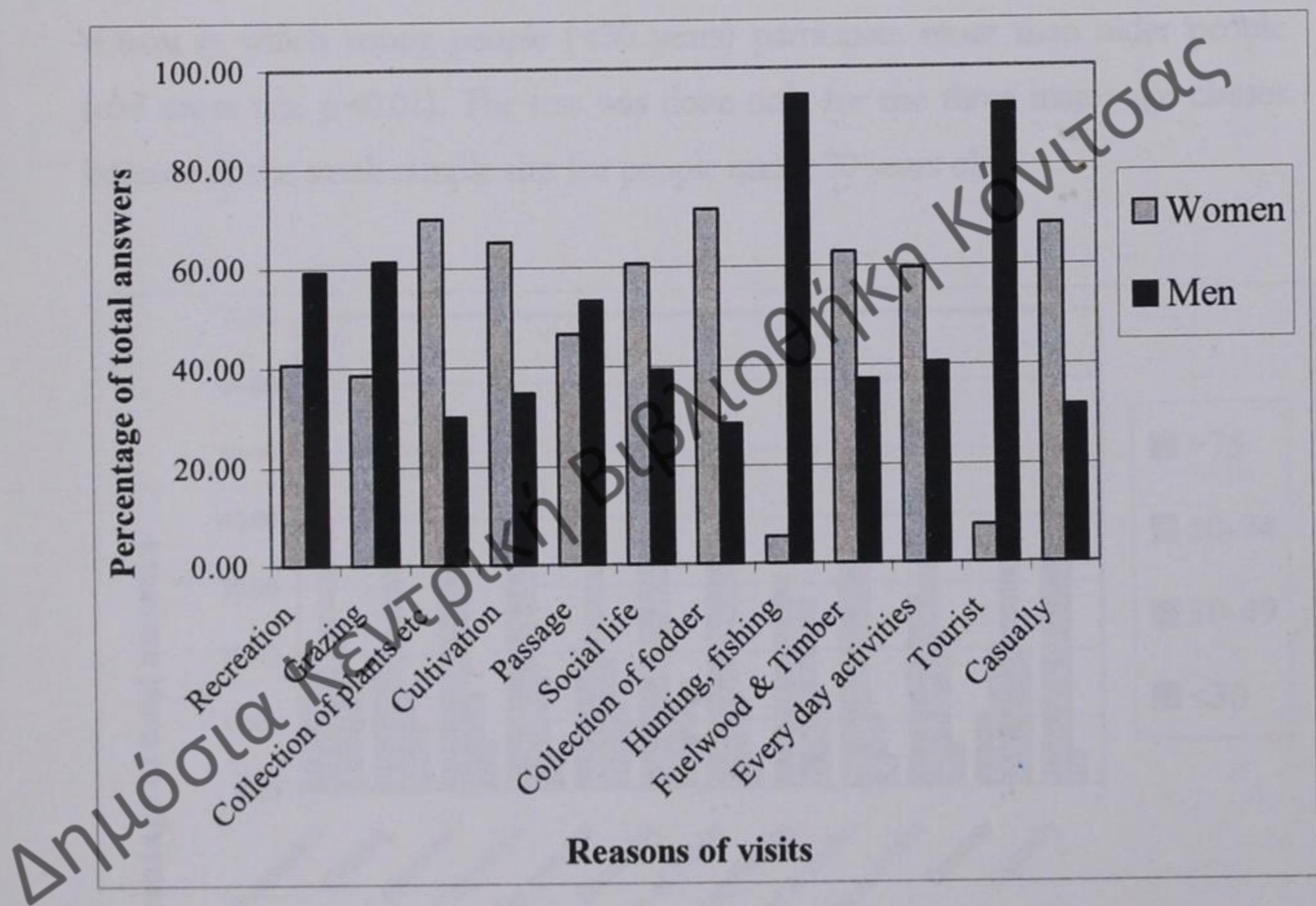


Figure 4: Frequency of reasons given for visits for men and women expressed as a percentage of total answers given.

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6.4.1. 2 Age

The reasons for visits mirror pretty well the change in the area as traditional activities related to livelihood decreased in small ages and were replaced by work relating to tourism (see Figure 5). For older people (>50 years) the most frequent reasons given for visiting were collection of non-timber products, cultivation of the land, social life, grazing and collection of fodder. Especially for the oldest people (>75) hunting and fishing seemed to be more important reason for visiting an area than for the other age classes. Work relating to tourism is the only reason in which young people (<50 years) participate more than older people (χ^2 cross tab, $p < 0.01$). The test was done only for the three major age classes because of the small sample size for people under 30 years old.

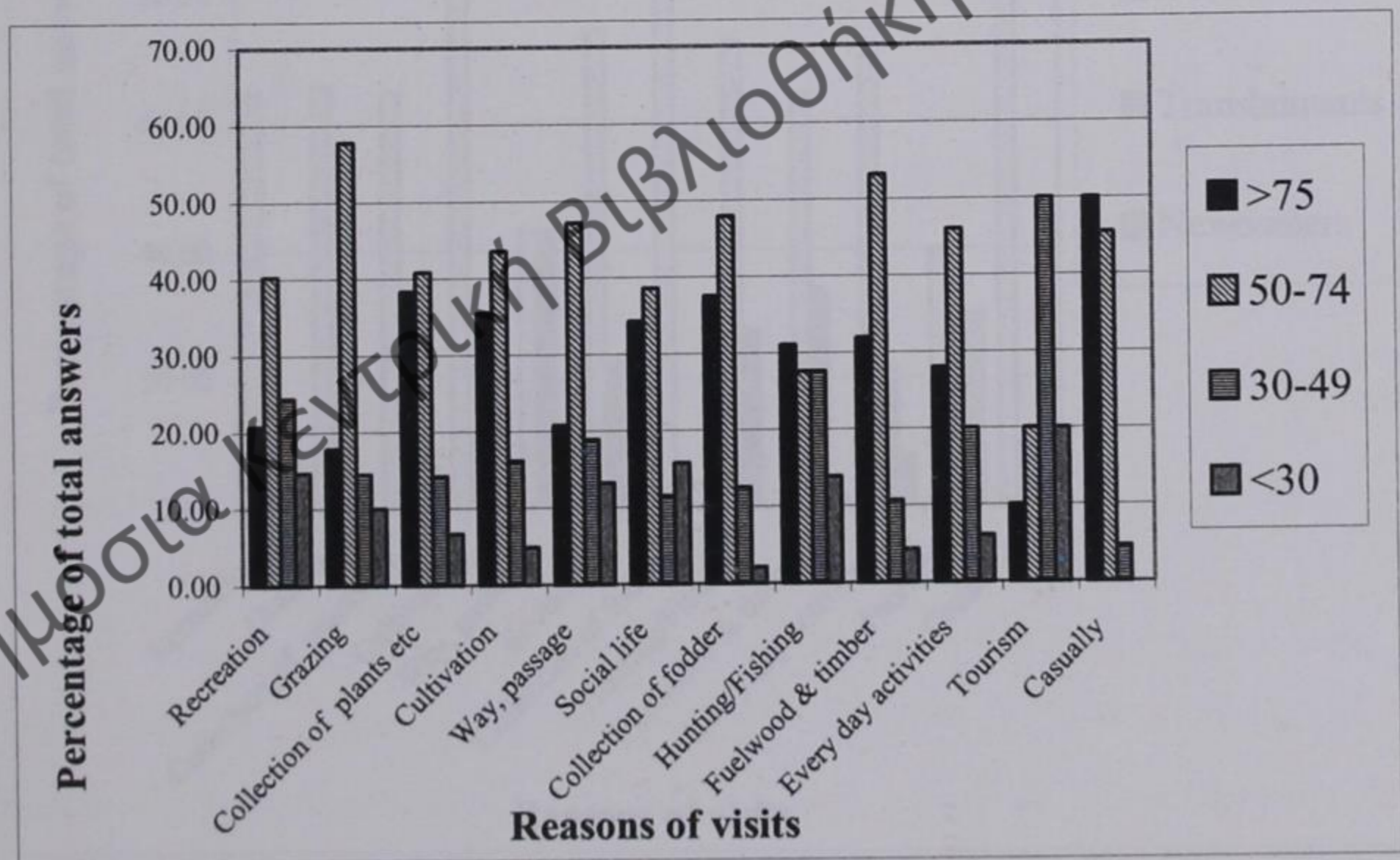


Figure 5: Frequency of reasons given for visits for different age classes expressed as a percentage of total answers given.

The reasons for this were that... with the change in the way a...
 analysis related to... in small... and...
 relating to... for... (2017) the...
 reasons given for... of...
 the... the... of...
 (2017) having... to be...
 relating to... for...
 in which... (2017) ...
 on... (2017) ...

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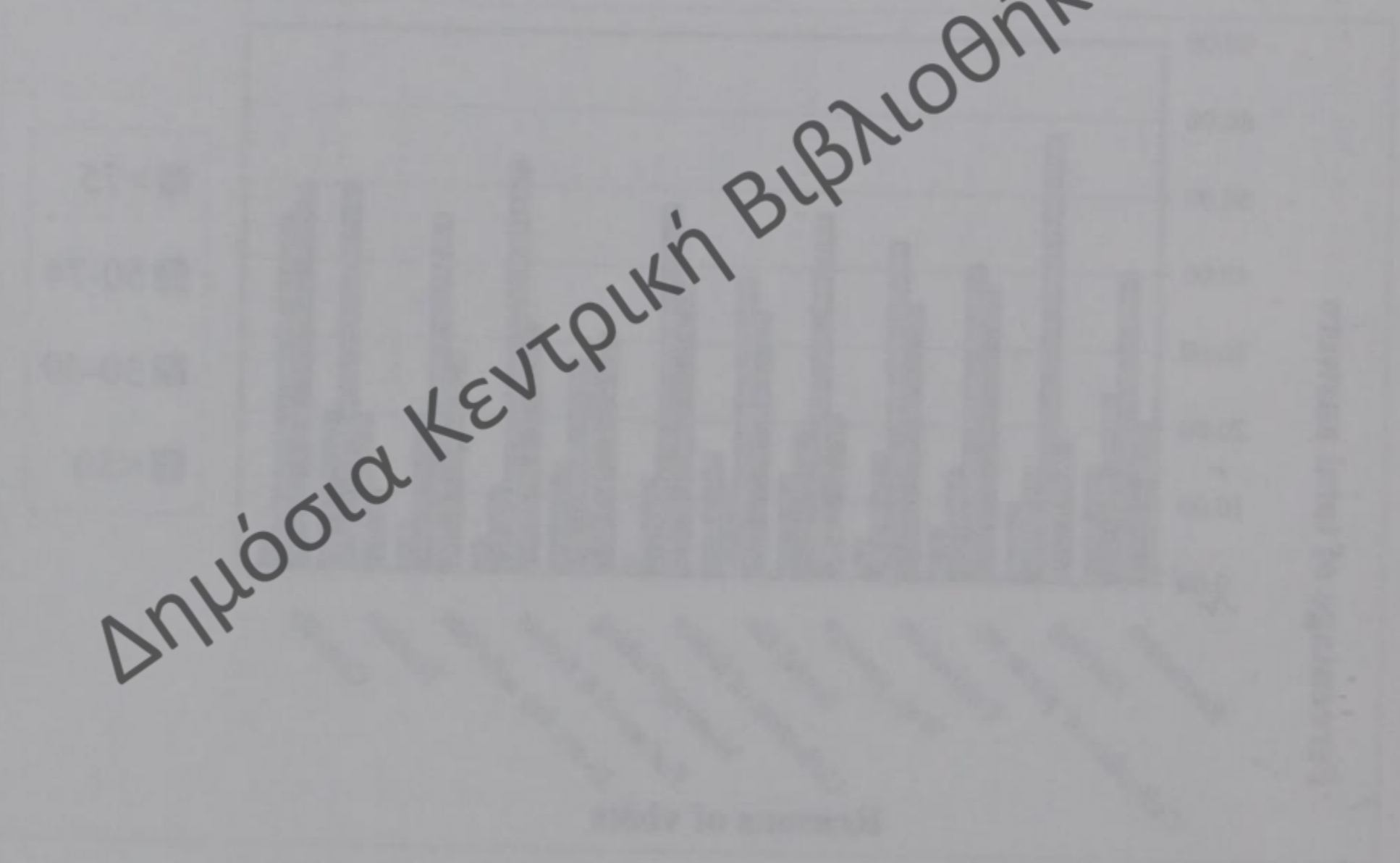


Figure 2: Frequency of... for different age groups...

6.4.1.3 Social group

A chi-square test was applied to compare differences between locals and transhumants. Newcomers were excluded from the analysis due to their very low number of responses. What the test showed was that locals and transhumants differ significantly in the degree in which they use the area (χ^2 cross tab, $p < 0.01$). Locals in general used the area more and they were almost exclusively occupied with fodder collection and cultivation (see Figure 6). Routes were used equally by transhumants and locals, while transhumants and newcomers visited several areas because they work with tourists.

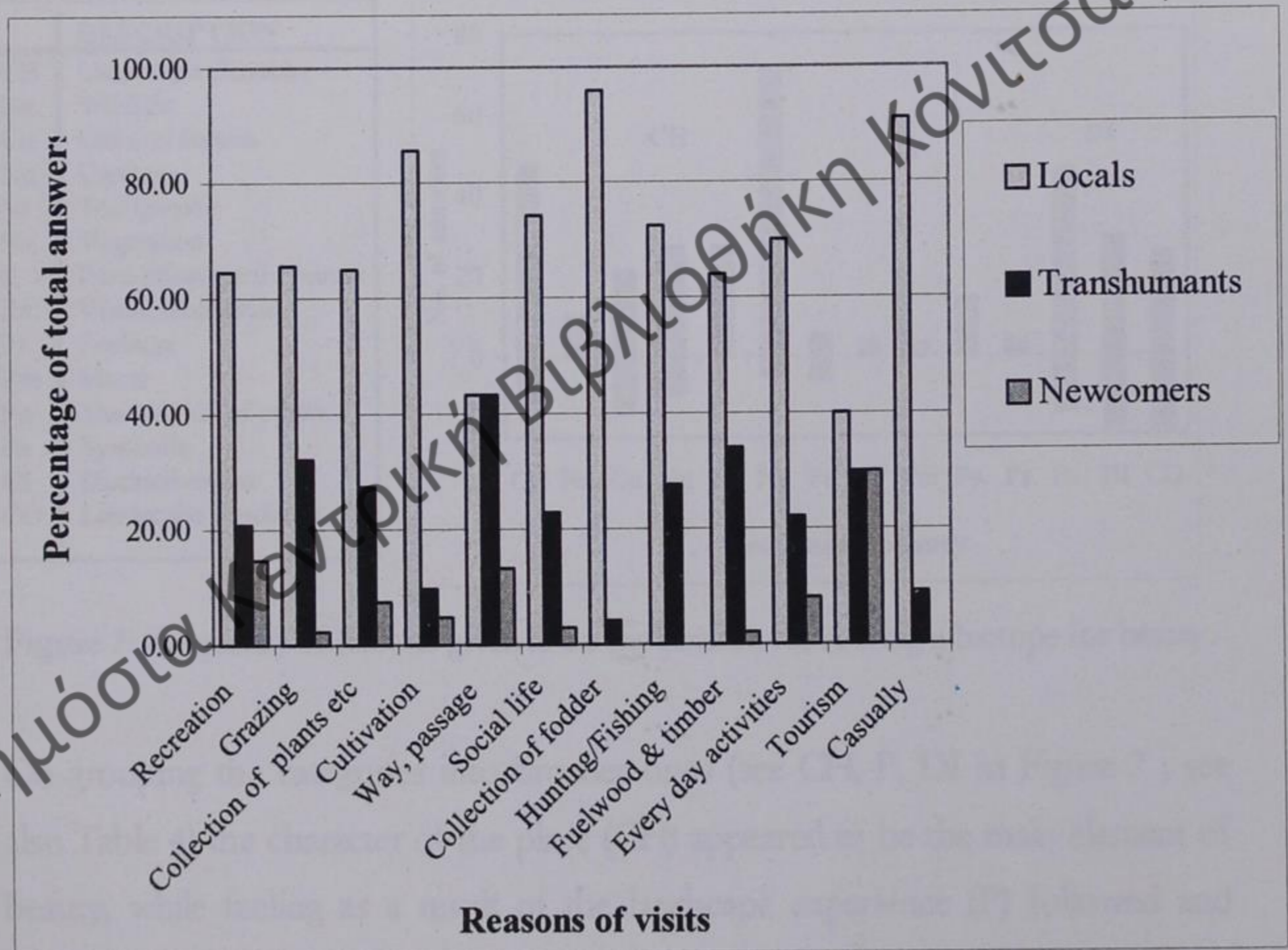


Figure 6: Frequency of reasons given for visits for different social groups expressed as a percentage of total answers given.

A chi-square test was applied to compare differences between social and religious respondents. Respondents were excluded from the analysis if they had not answered the question. When the test showed that the level of significance was higher than 0.05, it was concluded that there was no significant difference between the two groups. In cases where the level of significance was lower than 0.05, it was concluded that there was a significant difference between the two groups. The results of the chi-square test are presented in Table 4.1.3.1. The results show that there is a significant difference between the two groups in terms of the number of respondents who answered 'yes' to the question 'I am a member of a religious organization'.

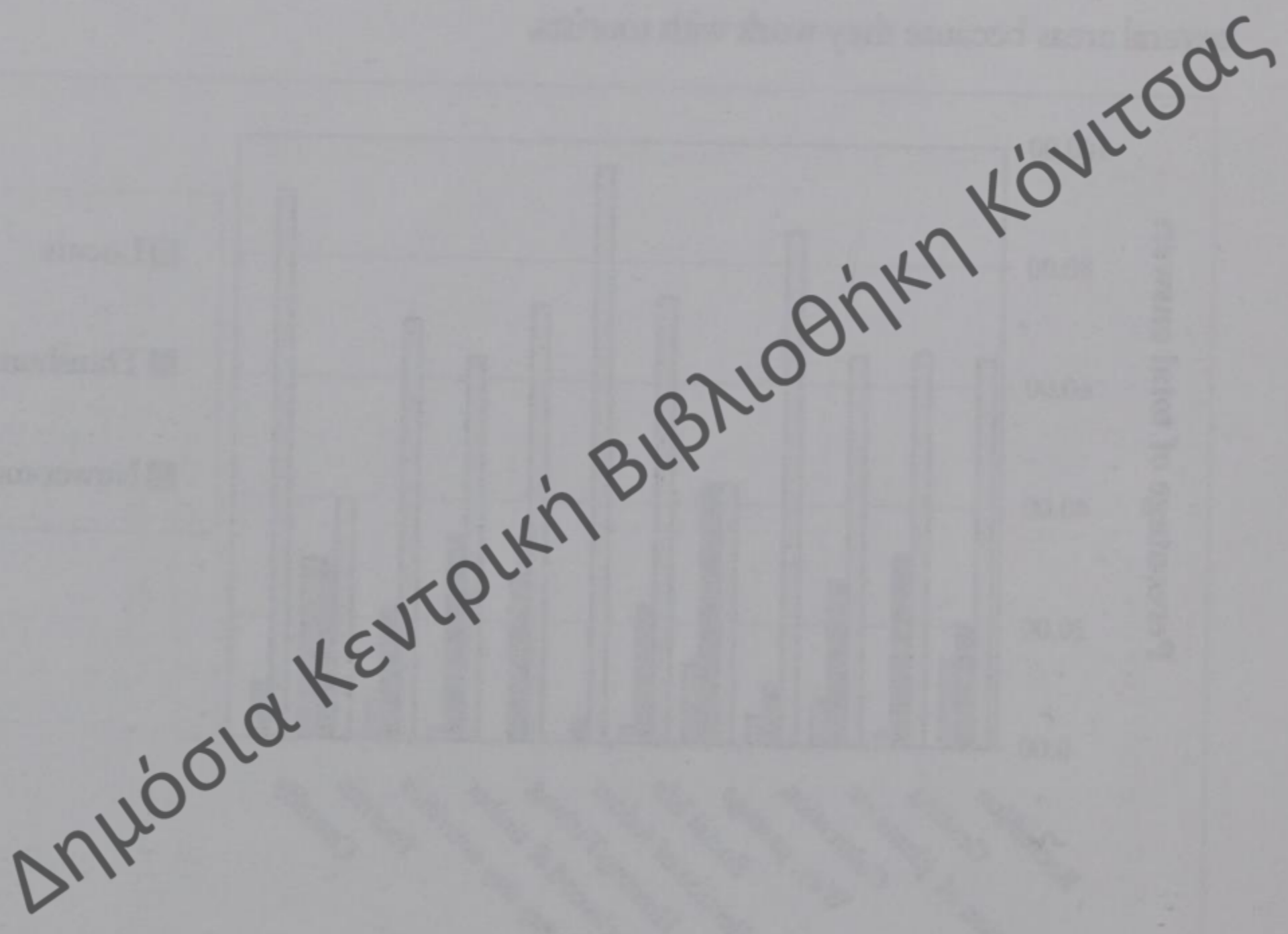


Figure 4.1.3.1: Frequency of responses for each social class for the question 'I am a member of a religious organization'.

6.4.2 Beauty

Presence of vegetation (Nv) was the most frequent reason for respondents scoring a biotope highly for beauty (see Figure 7). Visual dimension (Pv) landscape characteristics (CH) and distinctiveness (DI) followed. Cultural characteristics (Cu), geological features (Ng) and landscape condition (CO) were next, while all the other categories contributed little to the composition of the image.

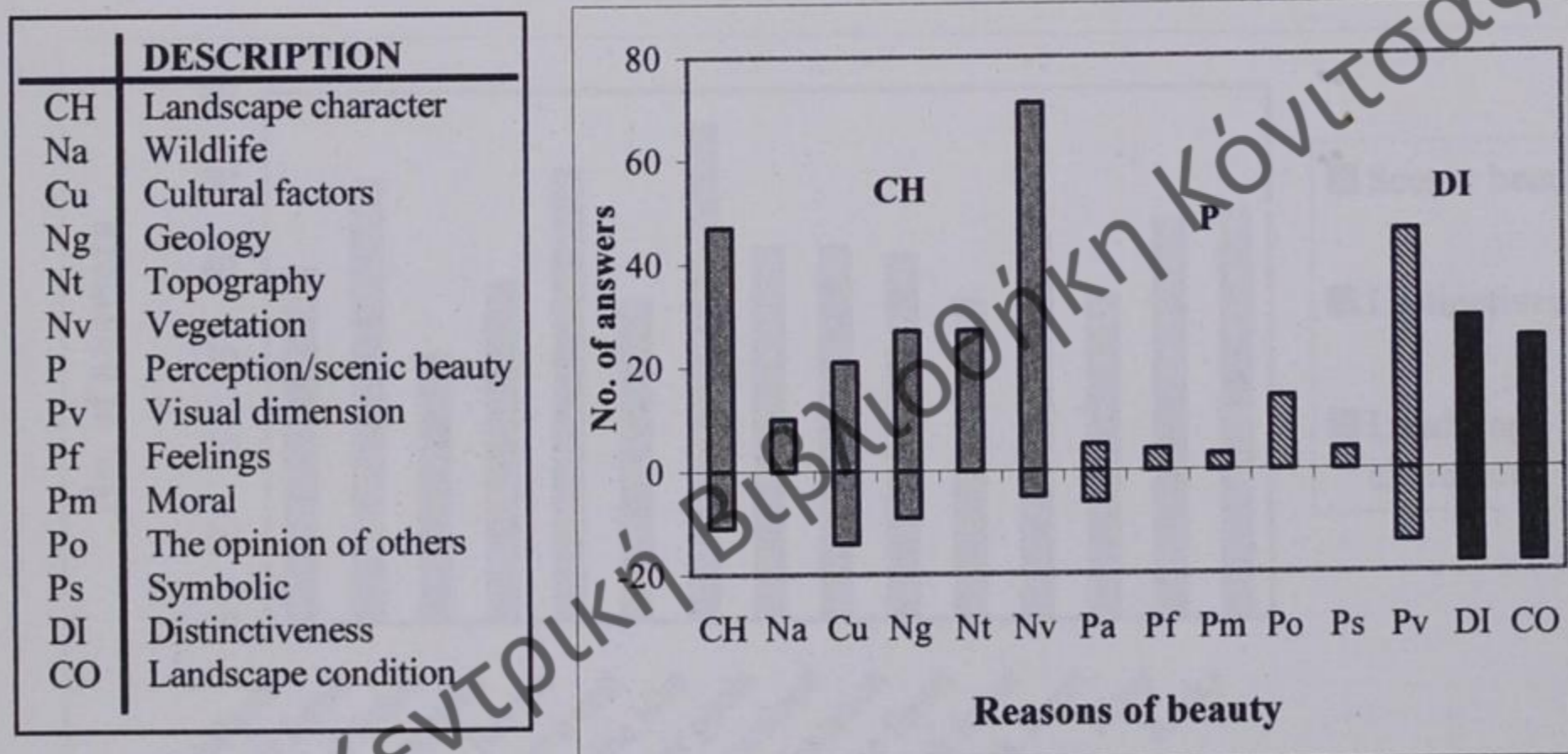
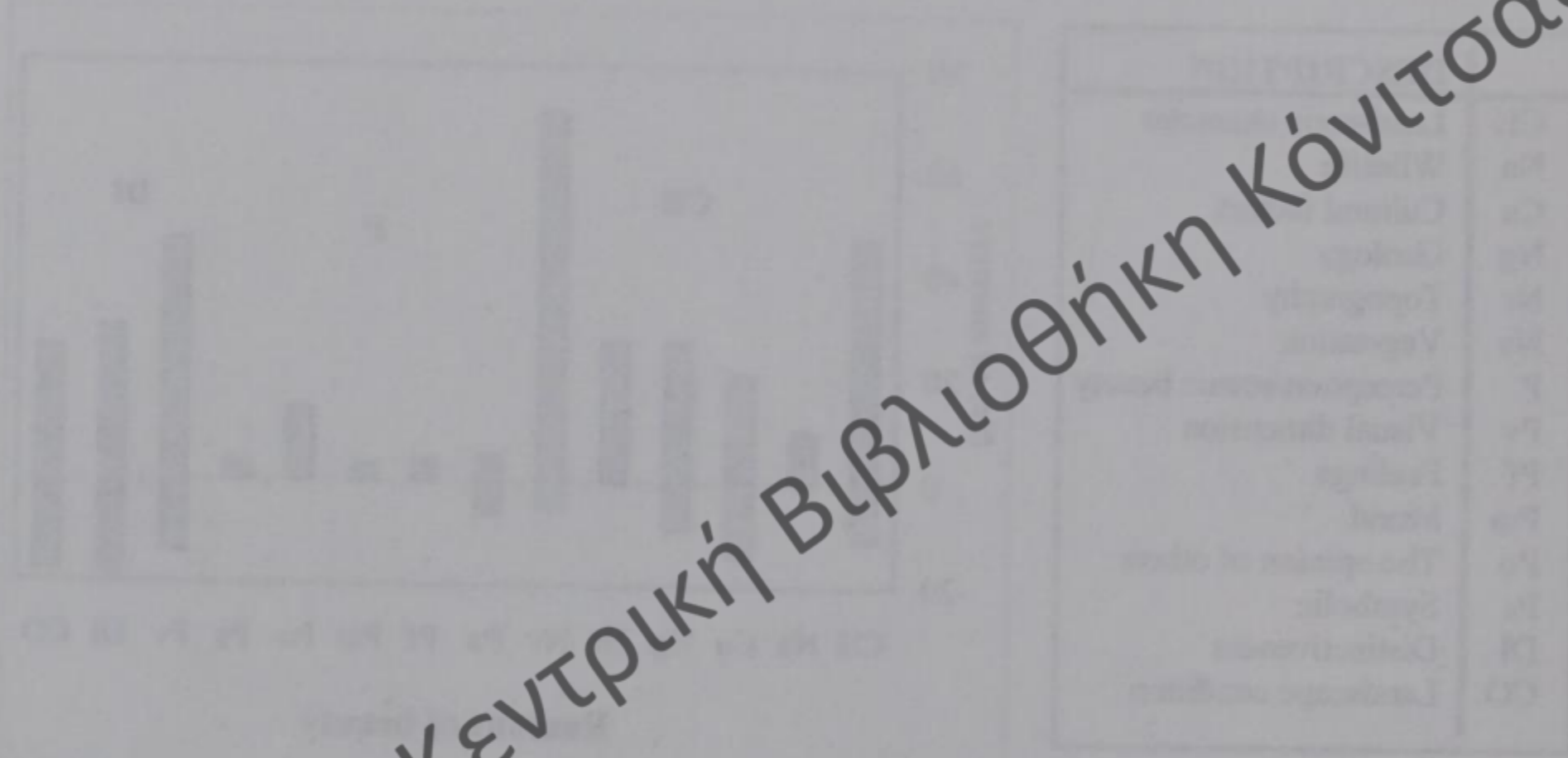


Figure 7: Frequency of reasons given as an explanation for scoring a biotope for beauty.

On grouping the categories into broader ones (see CH, P, DI in Figure 7 ; see also Table 4) the character of the place (CH) appeared to be the main element of beauty, while feeling as a result of the landscape experience (P) followed and distinctiveness and condition of the landscape (DI) that strengthen its character came third. Negative categories appeared because some participants gave the reasons of low scoring (see Table 18 in Appendix 4 for negative categories).

Factors of variance (F) and the most significant factors for variance
 showing a linear effect for many factors (Fig. 7). First variance (V1)
 indicates characteristics (C1) and dimensions (D1) factors. Second
 characteristic (C2), physical factors (P1) and variance analysis (V2) were
 next, while all the other variance explained less in the composition of the



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Figure 7. Frequency of variance given as explanation for the variance.
 On grouping the variance and variance one (C1, D1, P1, V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12) in Table 8 the character of the sites (C1) appears to be the most important of them, while looking at a number of the variance components (V1) followed and dimensions and location of the landscape (V2). The variance in variance can also indicate variance appeared because some participants gave the variance of low scores (see Table 8 in Appendix 4 for variance analysis).

The comparison of biotopes and detailed beauty categories was not possible because of the large number of small values (χ^2 cross tab, detailed beauty categories vs. biotopes, 78.6% of cells have an expected count less than 5). Nevertheless the test between biotopes and broad categories showed significant differences (χ^2 cross tab, $p < 0.01$). In almost all the biotopes high landscape quality as a combination of landscape character and distinctiveness was the main element of beauty (see Figure 8). In the river and the fresh water pools the visual dimension or aesthetic appeal (Scenic beauty) of the landscape was first. Moreover in the pastureland, it was the lack of distinctiveness, as an explanation of low scoring, that was important .

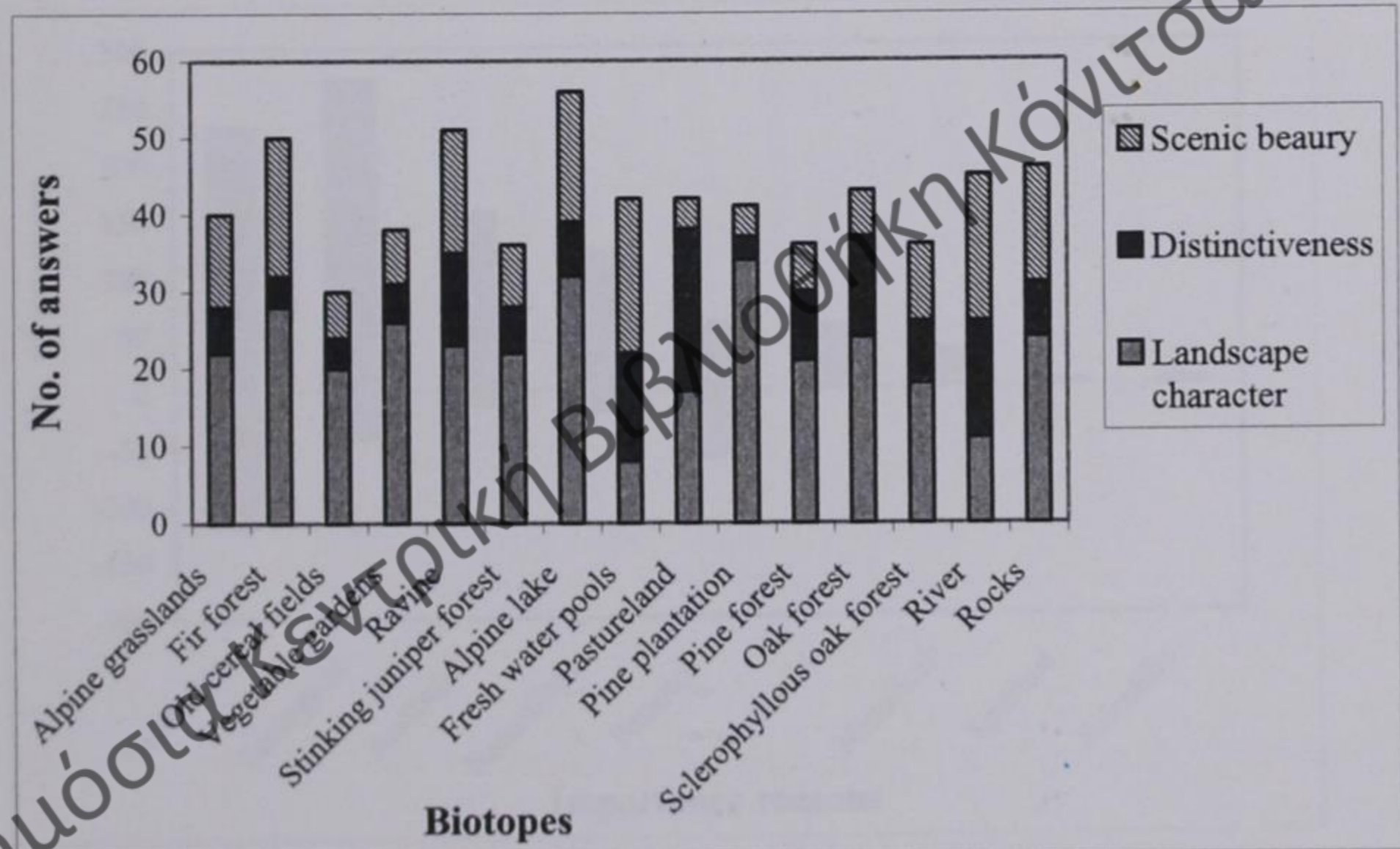
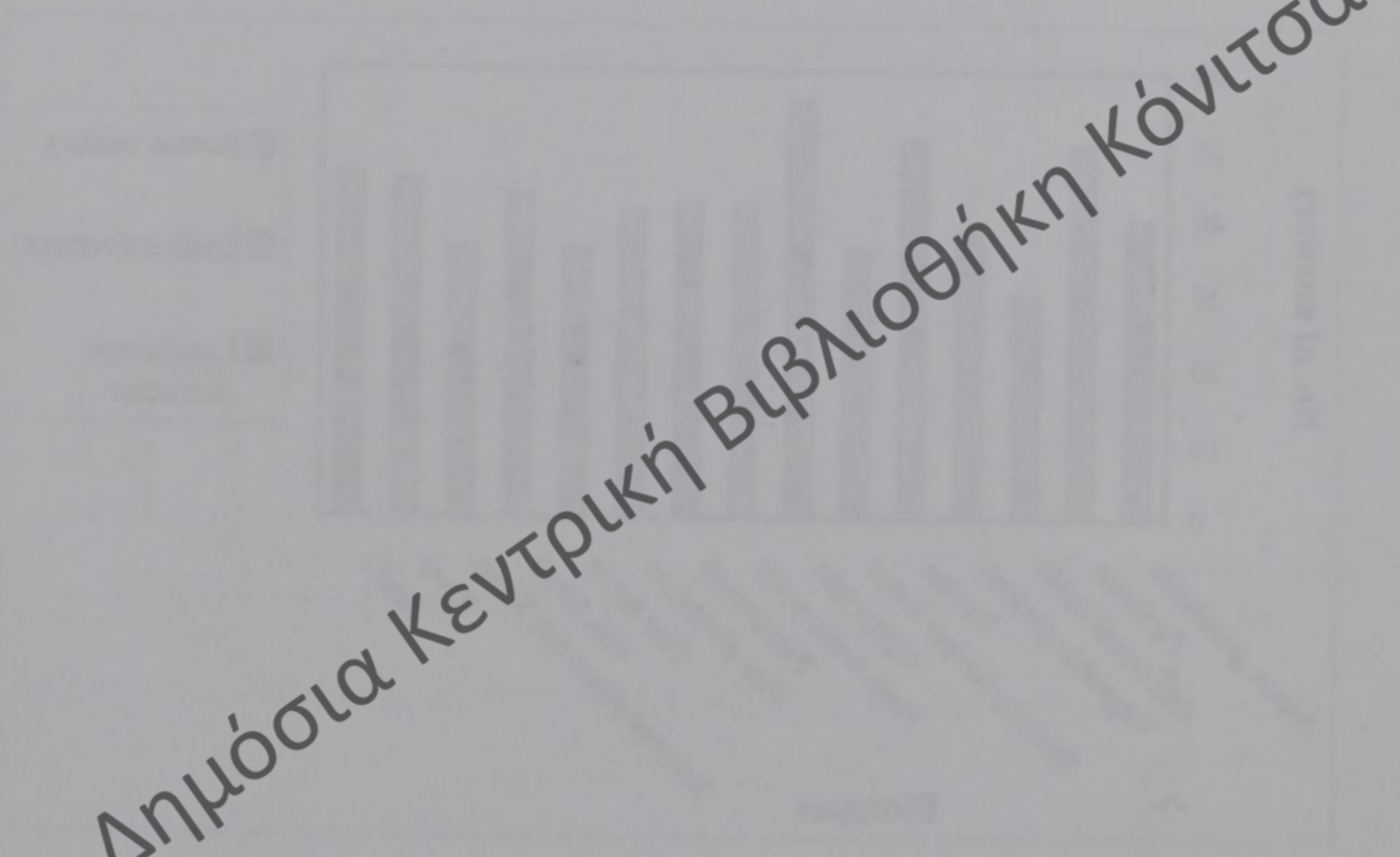


Figure 8: Frequency of reasons given for classifying a photograph for beauty for different biotopes.

The comparison of frequency and density between the two groups
of the left number of small values (the first group) and the
comparison of frequency, 75% of each group as expected from the
frequency the one between frequency and total number of
differences (the first case) is $p < 0.05$. In almost all the frequency high
density is a combination of frequency density and distribution and the
element of frequency (see Figure 8). In the first and in both cases the
distribution of weights (total number) of the frequency was
different in the parameter, a was the lack of distribution in an
element of frequency.



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Figure 8: Frequency of small values in density. A frequency of small values in density.

6.4.3 Importance

What appeared from the analysis of “why important” was that utilitarian and ‘ecological’ reasons (see also Table 5) were stated most frequently. Spiritual and scientific reasons were those that they were valued less (see Figure 9).

Positive and negative categories appeared because as in beauty (see Figure 7) people often gave the reasons of low scoring a biotope.

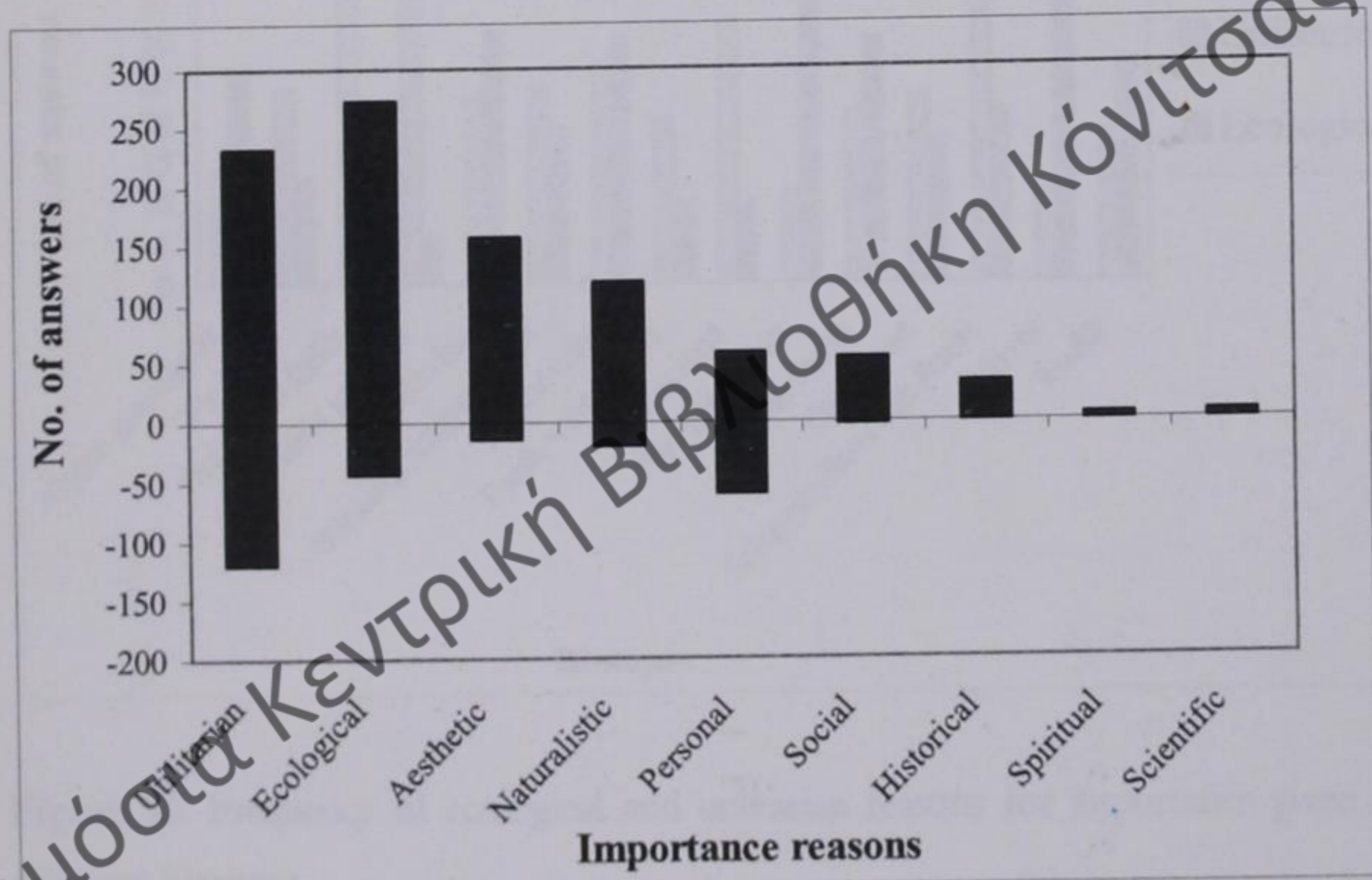
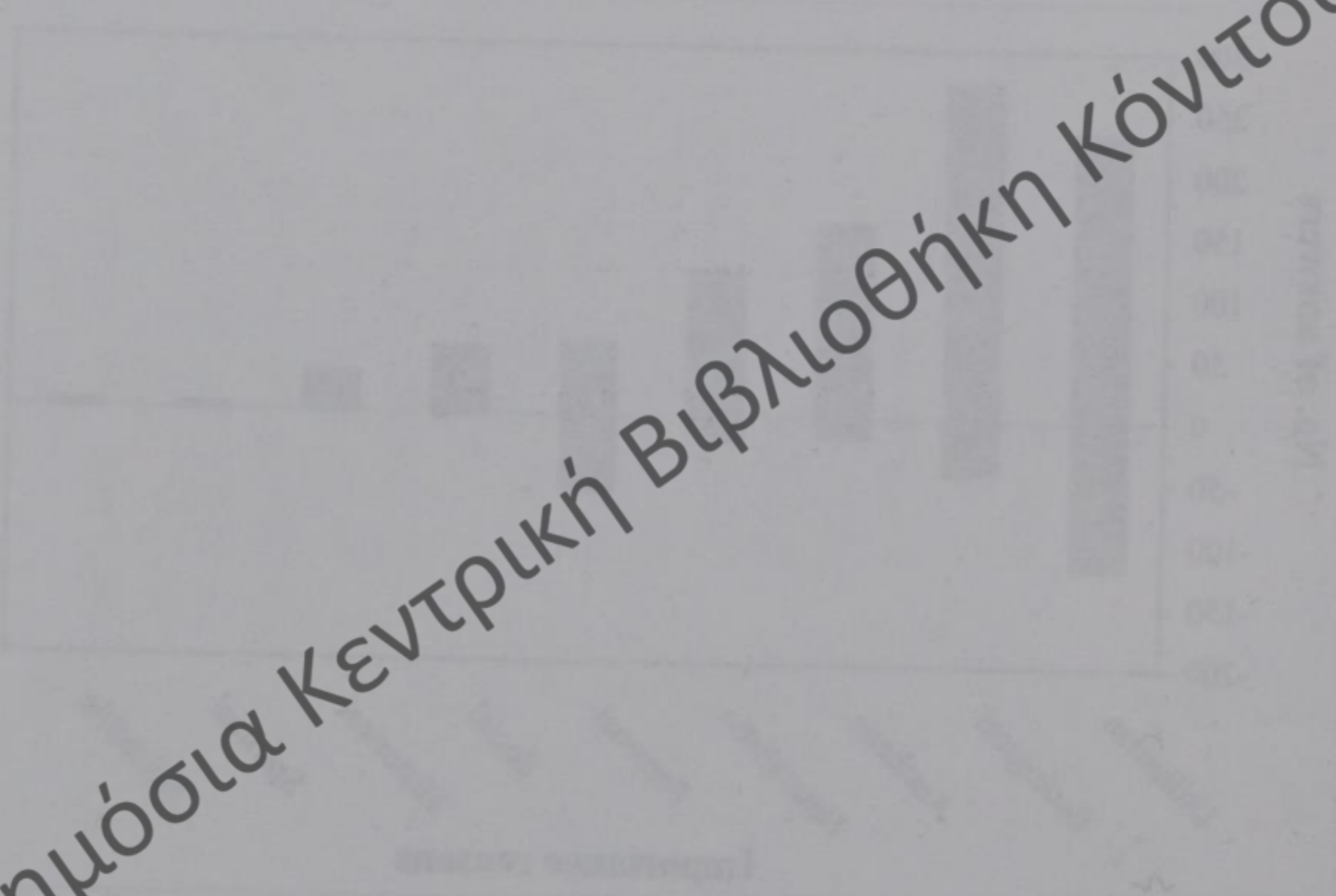


Figure 9: Frequency of reasons given for classifying a biotope as important.

Δημόσια Κεντρική Βιβλιοθήκη Κόνιτσας

The research into the needs of 'why' libraries was the objective and biological reasons for this (Table 2) was stated most frequently, followed by scientific reasons were that the they were valued for (see Figure 2). Positive and negative responses appeared because as is shown in Figure 2, people often give the reasons of low ranking a priority.



The analysis of the results showed that utilitarian reasons were significant (χ^2 cross tabs $p < 0.01$) in areas with an intense use in the past (e.g. old fields, vegetable gardens, pastureland, sclerophyllous forest), while 'ecological' reasons were important in the pine plantation, the river, the alpine grasslands, the rocky areas and the gorge (see Figure 10).

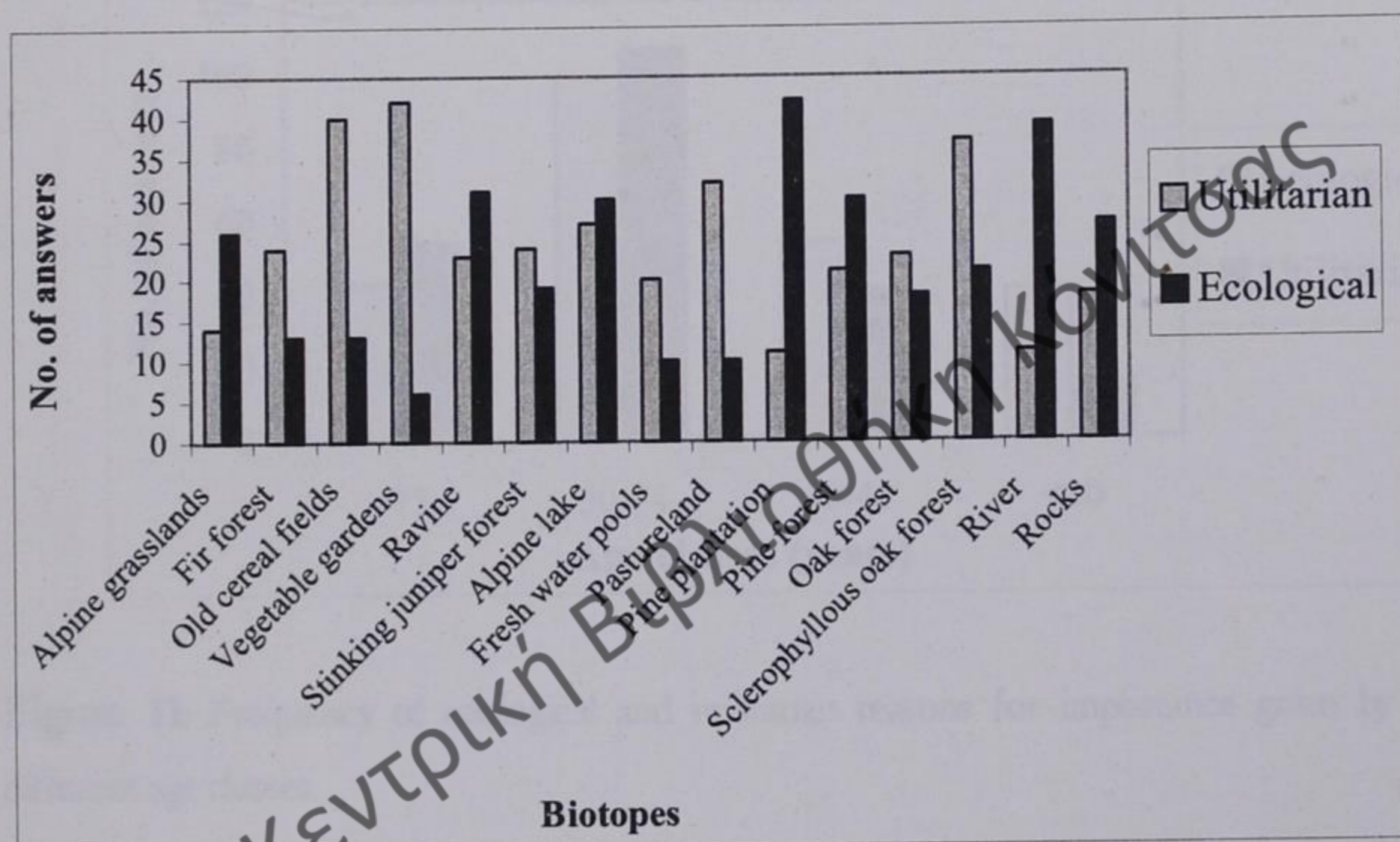
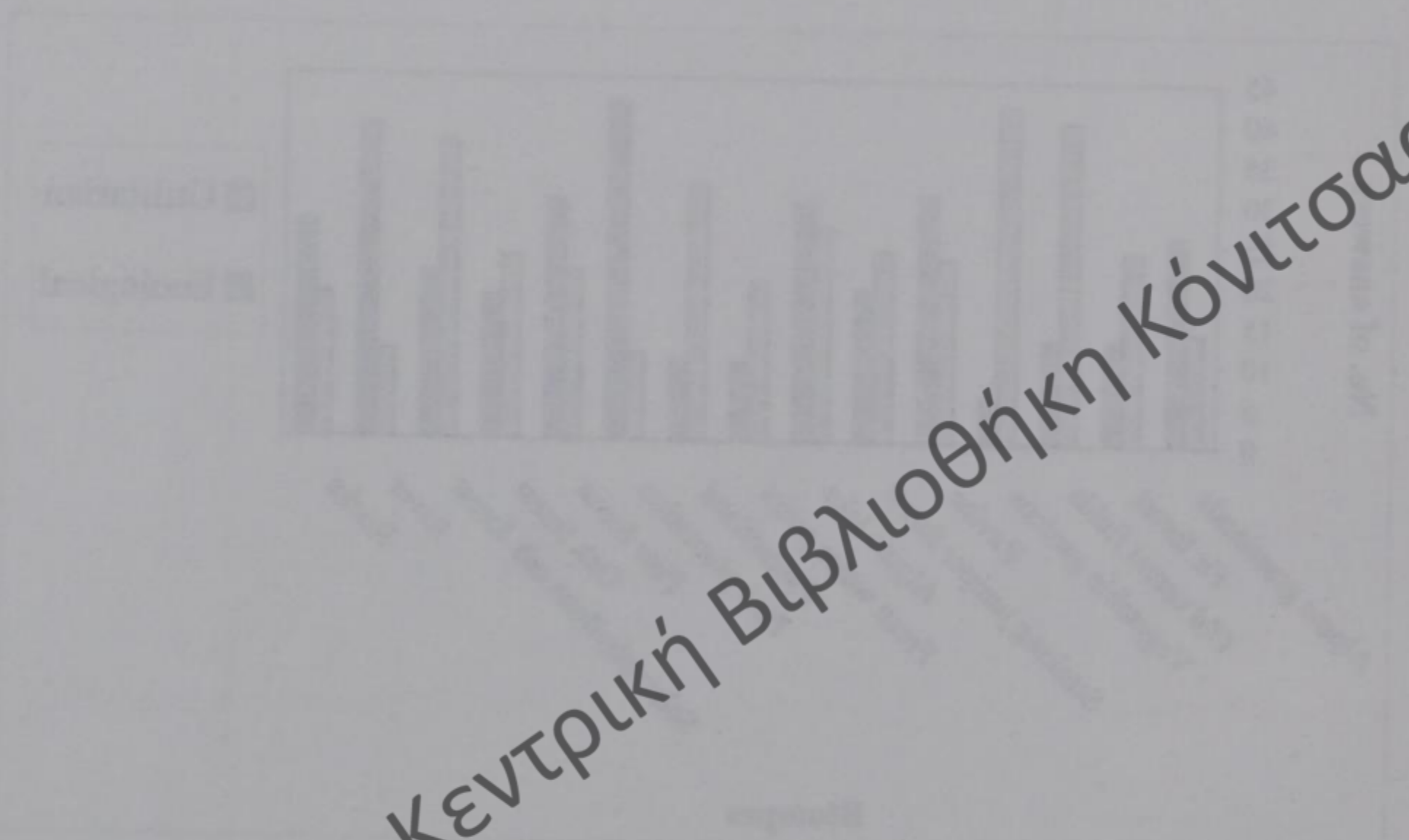


Figure 10: Frequency of ecological and utilitarian reasons for importance given for different biotopes.

The analysis of the results showed that significant differences were observed between the control and the treated groups in the first year of the study. The results showed that the control group had a significantly lower yield than the treated group in the first year of the study. The results showed that the control group had a significantly lower yield than the treated group in the first year of the study. The results showed that the control group had a significantly lower yield than the treated group in the first year of the study.



Δημόσια Κεντρική Βιβλιοθήκη Κόνιτσας

For older people (over 50 years) utilitarian reasons were most frequent while younger people (less than 50 years) gave 'ecological reasons' more often (see Figure 11). For the youngest age group utilitarian values were considered as significantly lower than ecological (χ^2 cross tab $p < 0.01$). Gender and social groups did not show any significant difference (χ^2 cross tab $p > 0.05$).

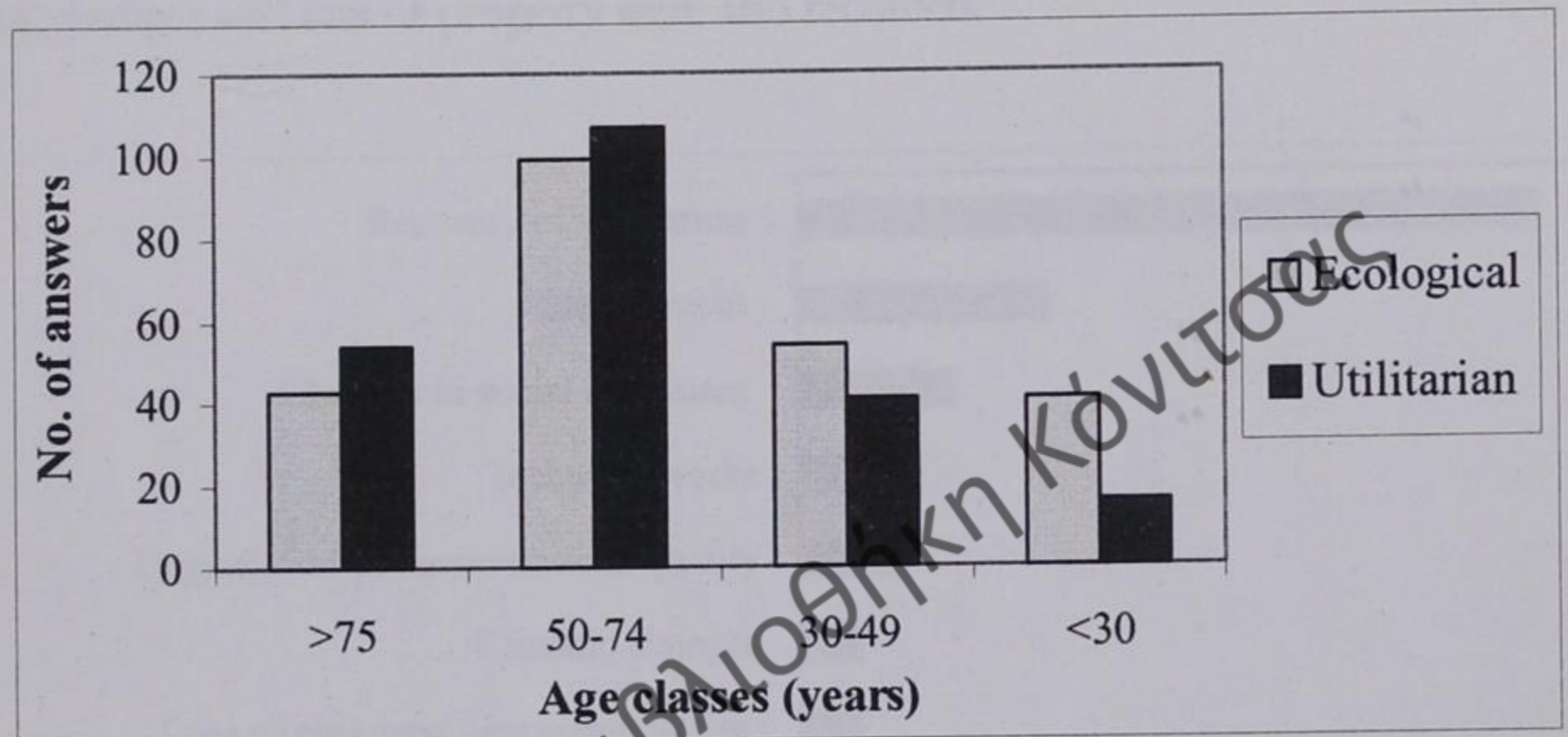


Figure 11: Frequency of ecological and utilitarian reasons for importance given by different age classes.

Δημόσια Κεντρική Βιβλιοθήκη Κόνιτσας

For older people (over 50 years) education was not a significant predictor of psychological well-being. However, for younger people (under 50 years) education was a significant predictor of psychological well-being. Figure 11. For the younger age group education was a significant predictor of psychological well-being ($p < 0.01$). Gender and social class did not show any significant differences ($p > 0.05$).



Δημόσια Κεντρική Βιβλιοθήκη Κόνιτσας

6.4.4 Change

Recovery of vegetation was by far the main cause of change that people see in environment (see Figure 12). Abandonment, changes in social structure and technical works related with commodities (improvement of paths, water pipes, roads, constructions of walls) were also frequently mentioned, while degradation, climatic changes and loss of property were also recorded.

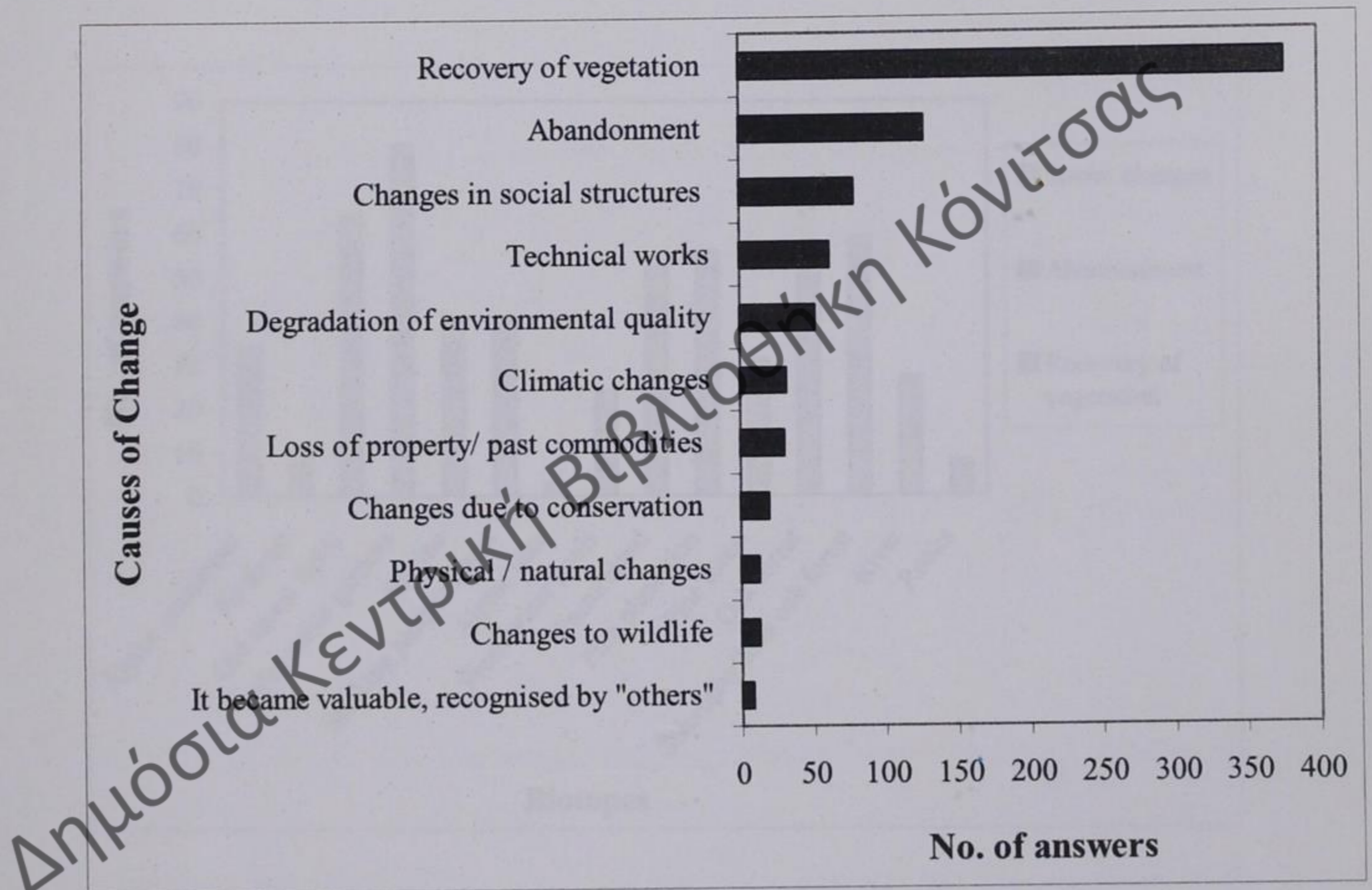


Figure 12: Frequency of responses given for different causes of change.

Δημόσια Κεντρική Βιβλιοθήκη Κόνιτσας

6.4.4.1 Change and biotopes

Many low values recorded did not permit any statistical testing (χ^2 cross tab, causes of change vs. biotopes, 73% of the cells have expected count less than 5). Nevertheless, recovery of vegetation was present in all the biotopes below the alpine zone and it seemed that it was the main cause of change, especially in the biotopes with an intensive use in the past (old fields, gardens) (see Figure 13a).

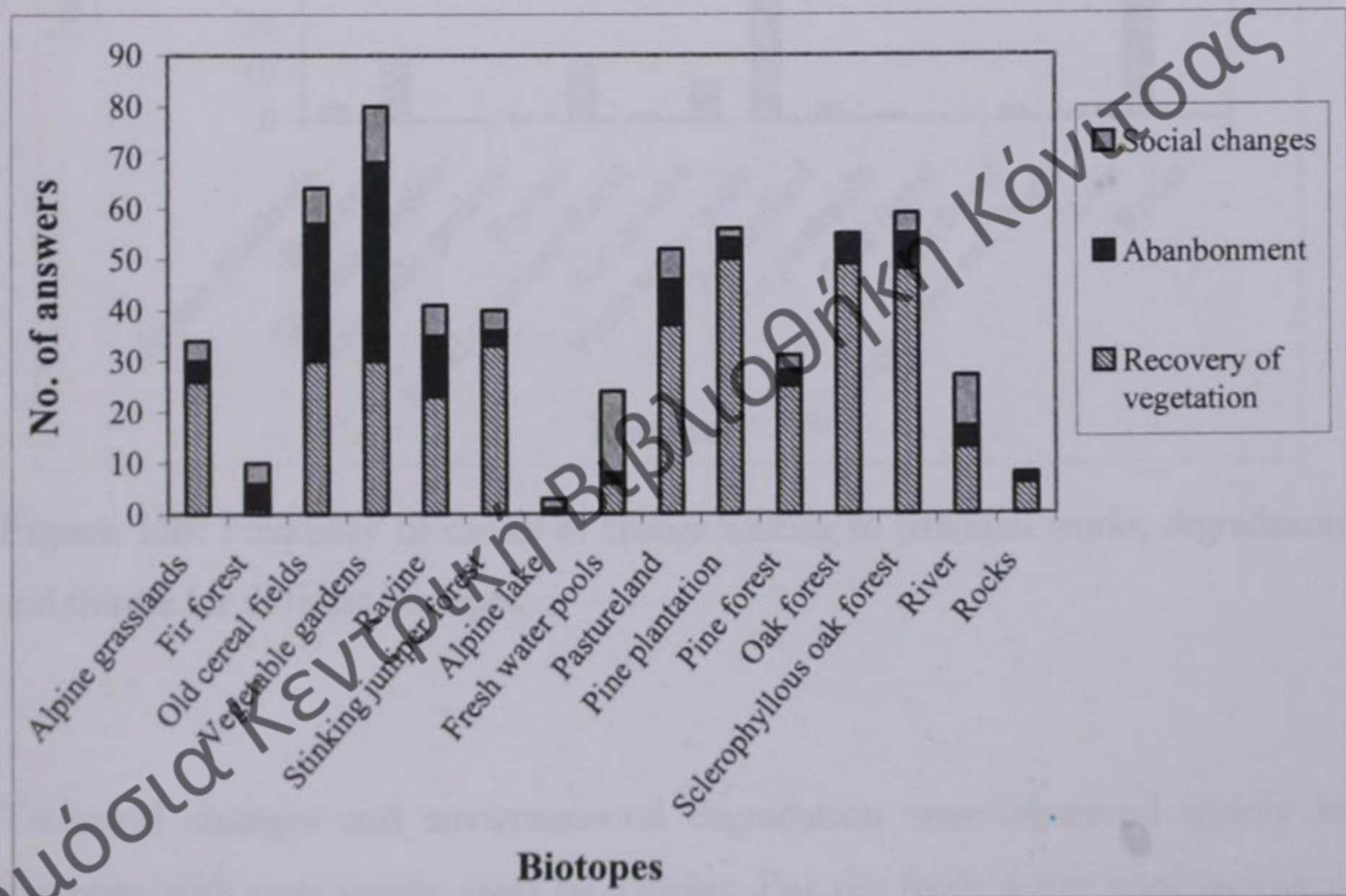
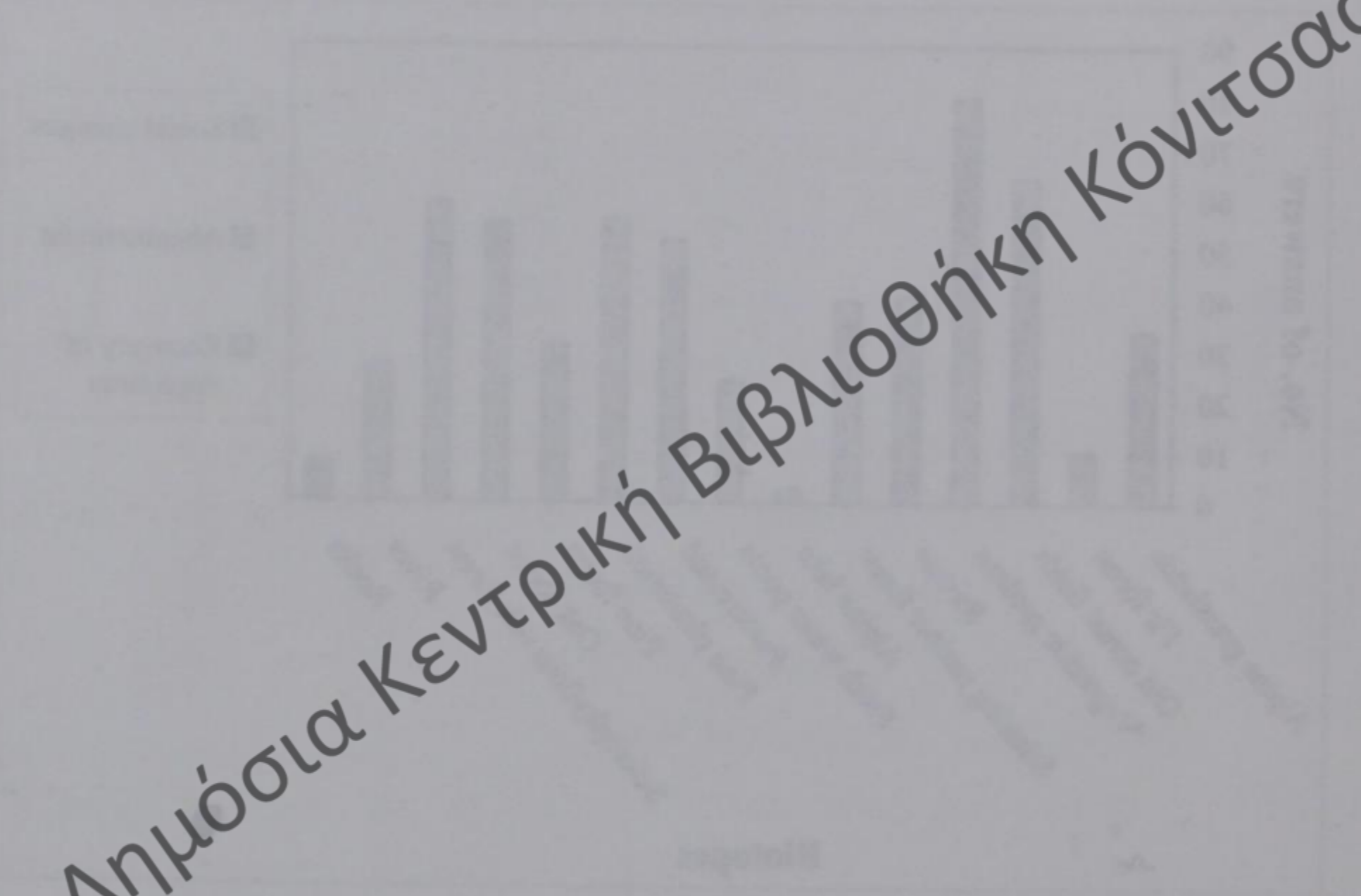


Figure 13a: Frequency of causes of change relating to social changes, abandonment and recovery of vegetation for different biotopes.

Mean for values recorded did not provide any significant change over the course of change in diversity. 75% of the sites have reported that the diversity of vegetation has increased in all the biotope sites. The sites and a second that it was the main cause of change, especially in the biotope with an increase in the past 10 years (see Figure 2.4.1).



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Figure 2.4.1: Frequency of change in diversity of vegetation for different biotope sites.

Climatic changes were observed in all biotopes related to water. Especially in the alpine meadows and the lake reduction of rain reported causing reduction of grass for livestock (see Figure 13b).

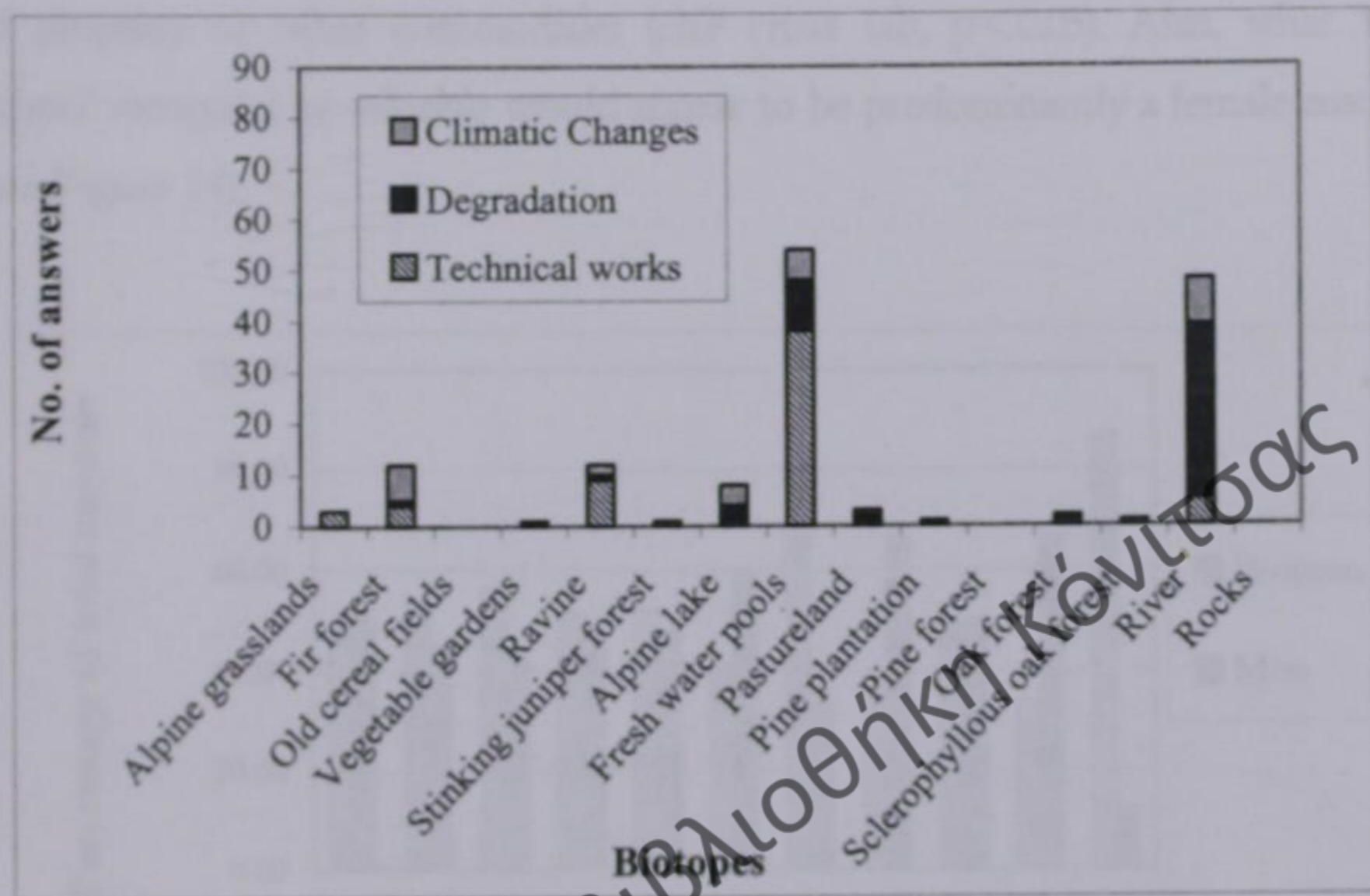


Figure 13b: Frequency of causes of change relating to technical works, degradation and climate for different biotopes.

Technical changes and environmental degradation were observed mainly in biotopes with easy access, used by tourists. For the fresh water pool technical works had the main effect, while for the river degradation to environmental quality, mainly as a consequence of tourism was the main reason of change (see Figure 13b).

Climatic changes are observed in all biotopes related to water. Especially in the alpine meadows and the lake vegetation of the exposed cooling stations of great for livestock (see Figure 13b).

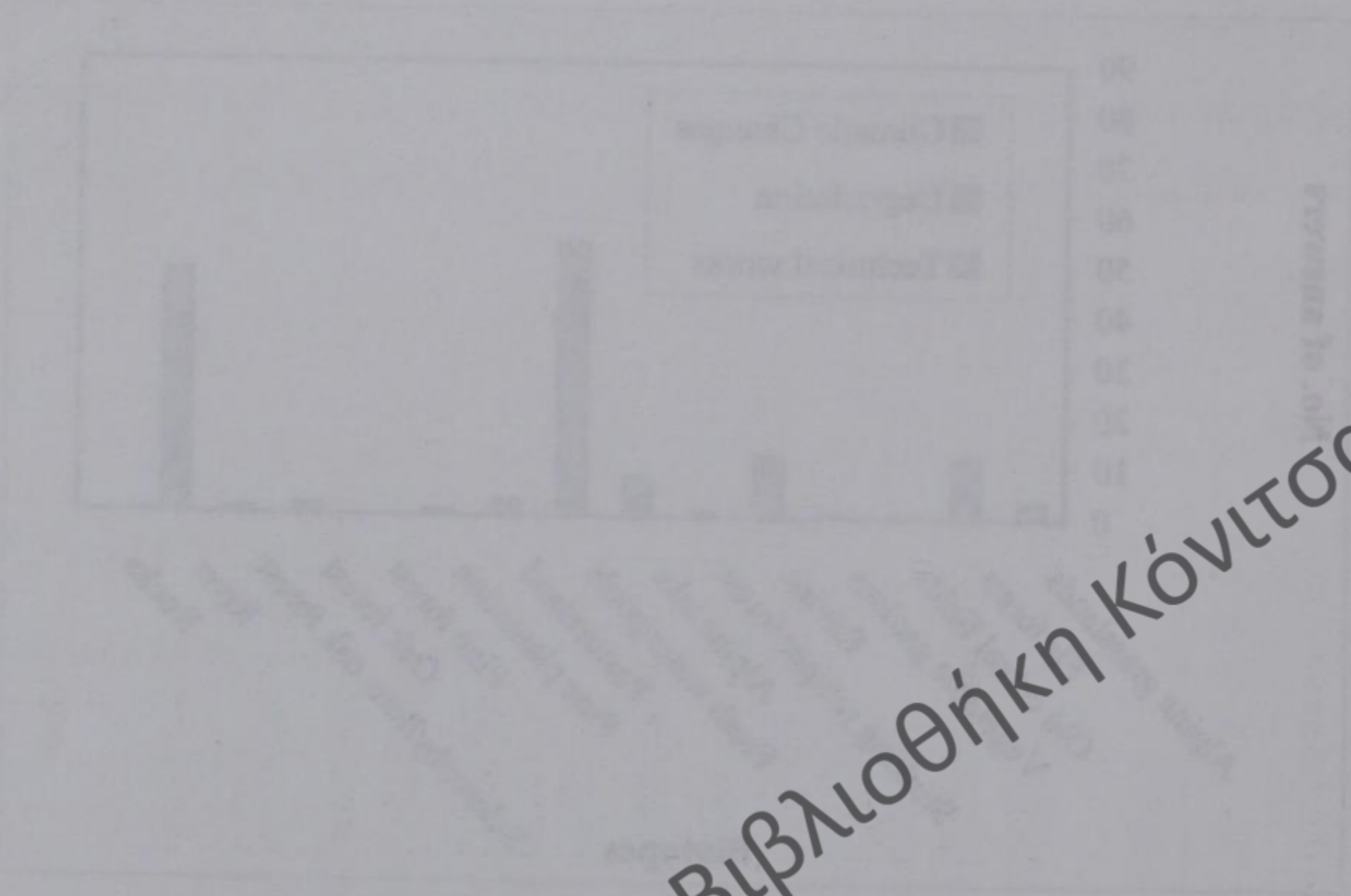


Figure 13b: Frequency of occurrence of different biotopes and climate for different biotopes.

Technical changes and environmental degradation were observed in biotopes with very narrow used by tourists. For the lake water biotopes had the main effect, while for the lake vegetation in cooling station quality, mainly as a consequence of tourism was the main reason of change (see Figure 13b).

Δημόσια Κεντρική Βιβλιοθήκη Κόνιτσας

6.4.4.2 Change and subgroups of people

Men appeared more aware of climatic changes and changes relating to wildlife, and conservation while women were more aware about changes related to loss of property or other commodities (chi² cross tab, $p < 0.05$). Also, what 'the others' recognize as valuable would appear to be predominantly a female matter (see Figure 14).

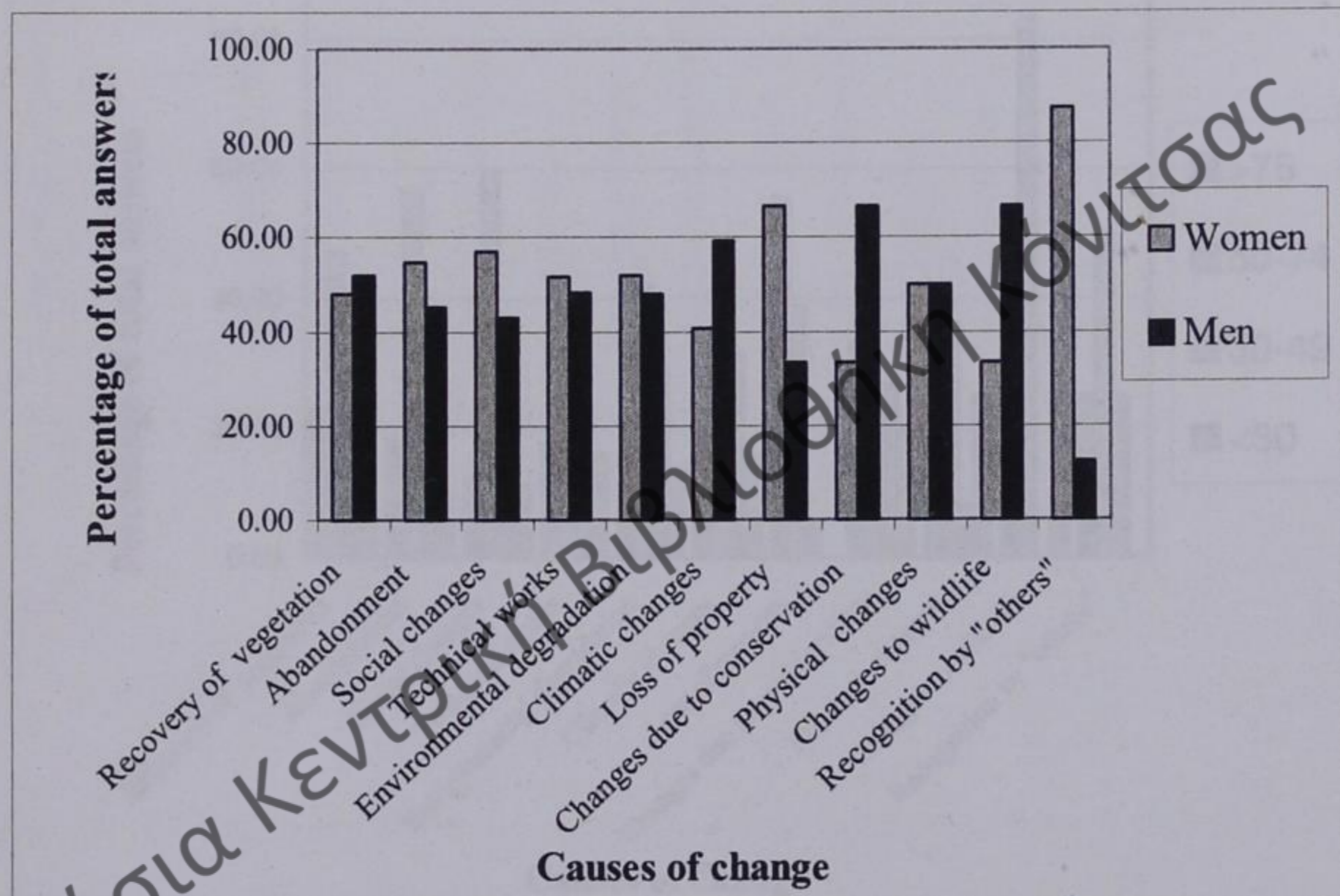


Figure 14: Frequency of causes of change for men and women expressed as a percentage of total answers given.

Public Central Library of Kifissia

People belonging to the **age class 50-74** years were more aware about abandonment and social changes than the other age classes and especially aware about changes to wildlife (see Figure 15). Loss of property was more important for the oldest people than for younger ones (χ^2 cross tab, $p < 0.01$).

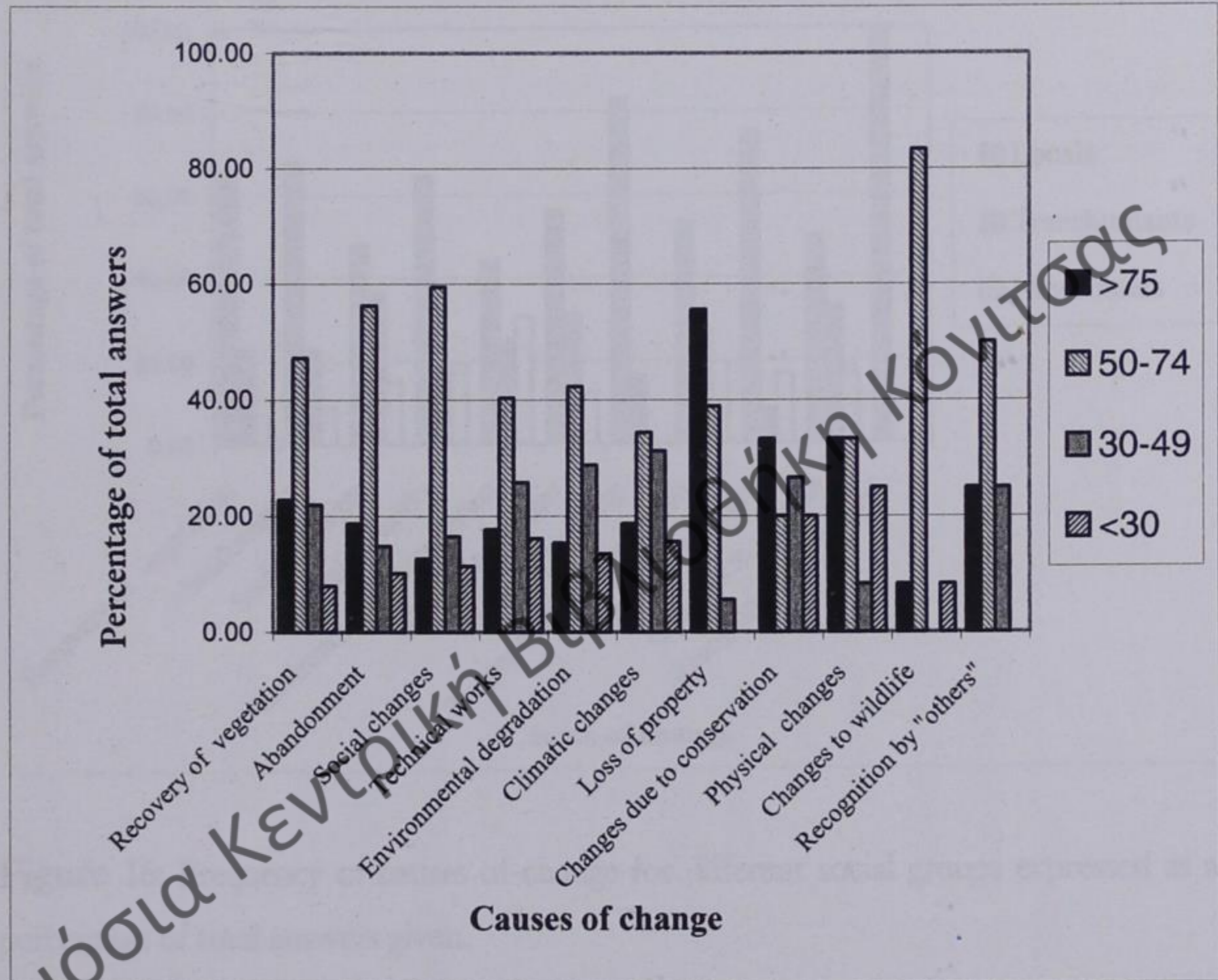
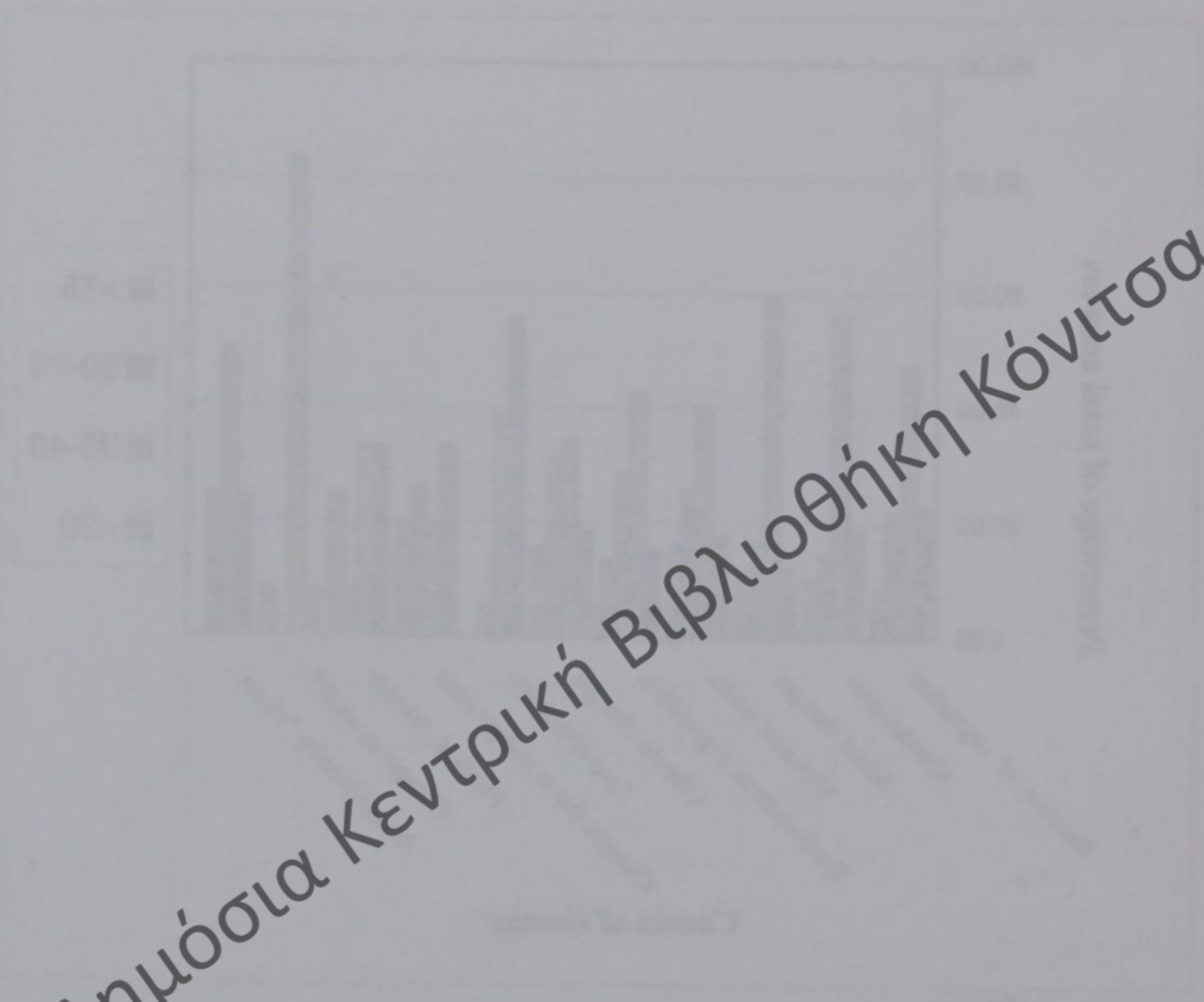


Figure 15: Frequency of causes of change for different age classes expressed as a percentage of total answers given.

People belonging to the age class 50-59 years were more likely to be employed and social changes than the other age classes and especially women show changes in welfare (see Figure 1). Less of progress was made however for the other people than the younger ones (see Figure 2).



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Figure 1: Percentage of total population in different age groups and social changes.

Although vegetation recovery was recognised as the first cause of change for all social groups (chi² cross tab, p<0.01), (see also figure 12), local people highly considered loss of the property and 'recognition by others' as change. On the other hand, newcomers were especially aware about changes related to technical works and degradation of environmental quality (see figure 16).

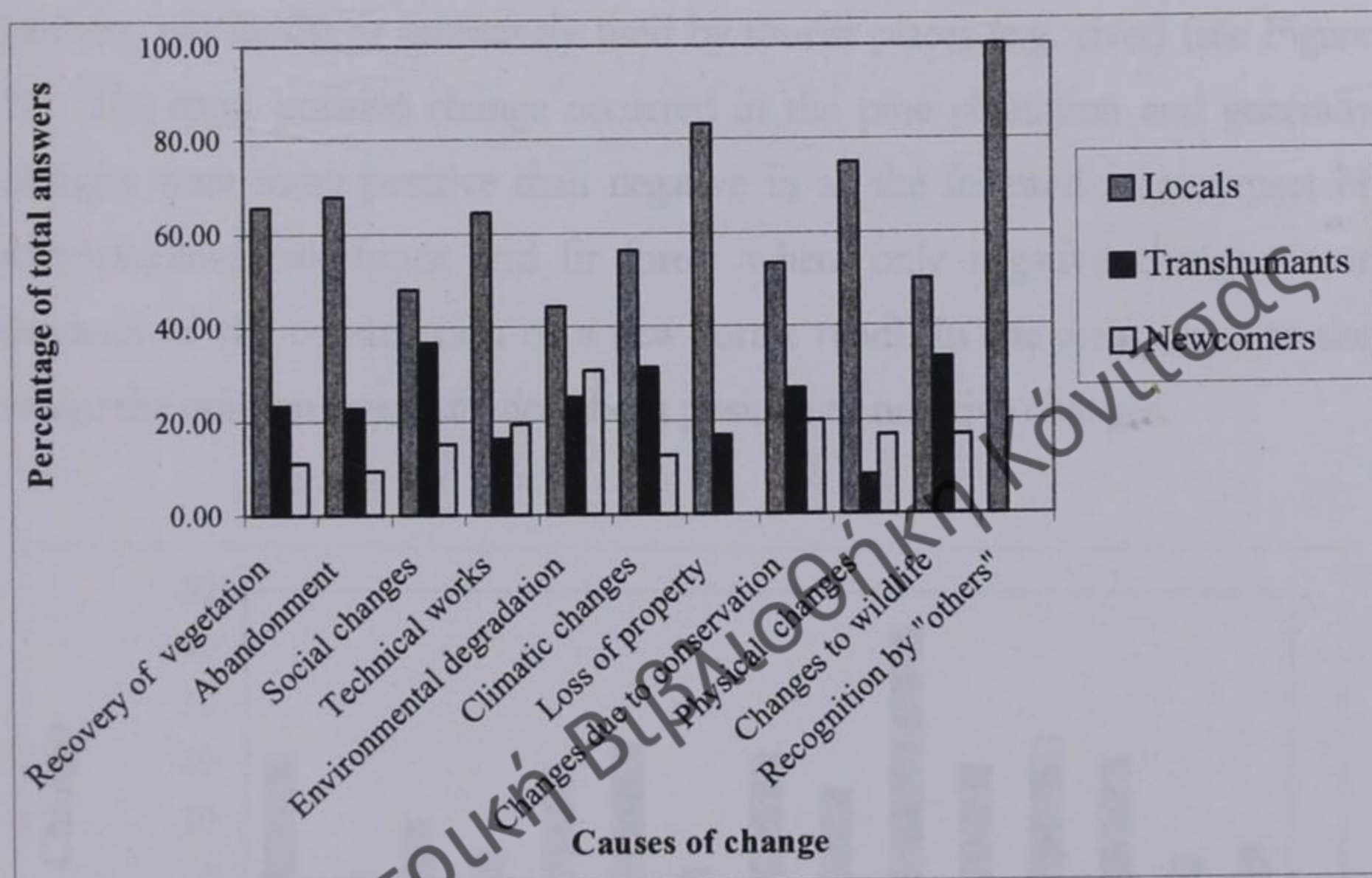


Figure 16: Frequency of causes of change for different social groups expressed as a percentage of total answers given.

Although vegetation recovery was rapid in the first year of change for all social groups (chi-sq test, $p < 0.05$) (see also figure 12), local people highly considered loss of the property and vegetation by others as change. On the other hand, our content were especially aware about changes related to technical works and degradation of environmental quality (see figure 16).

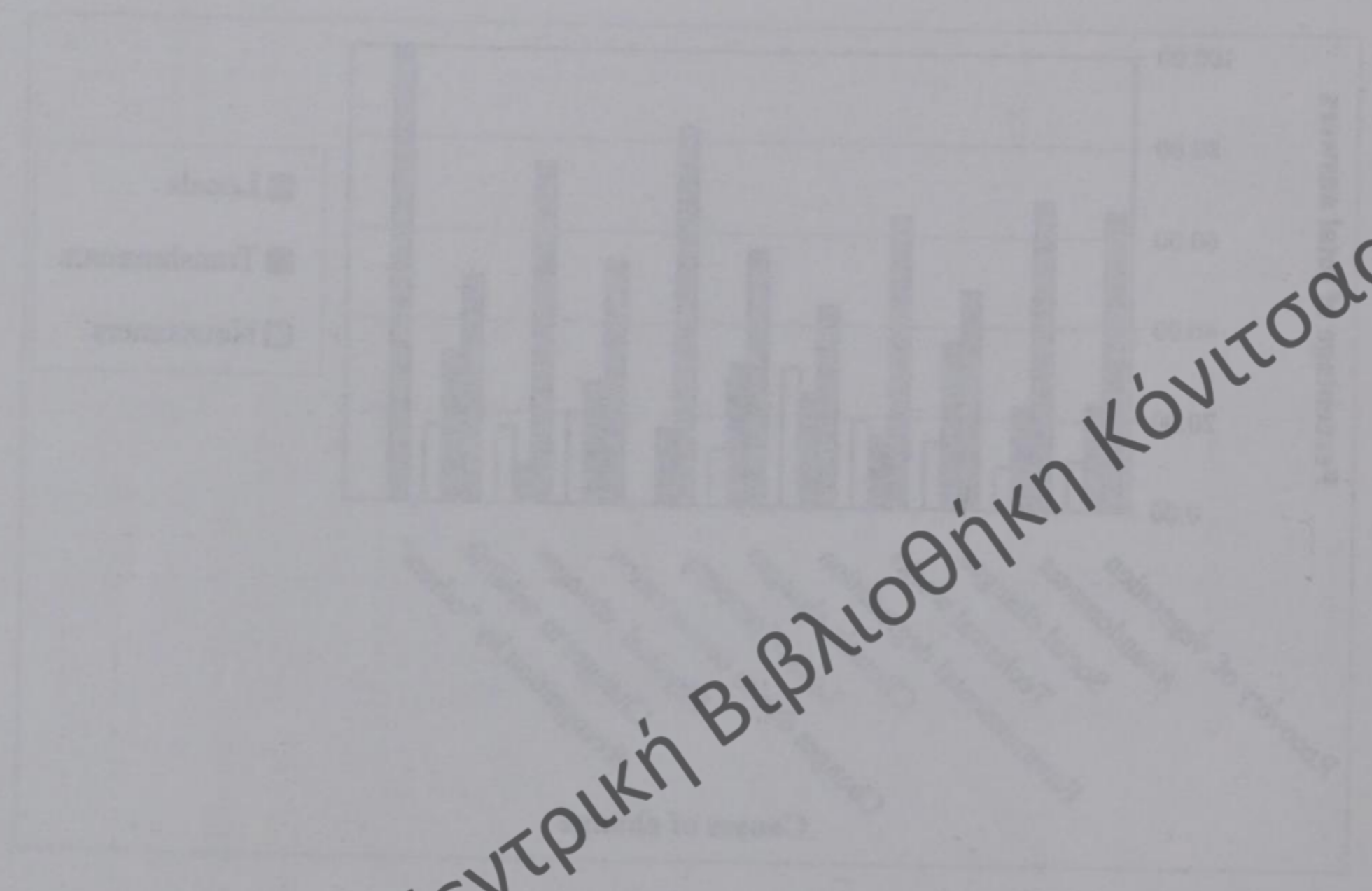


Figure 16: Frequency of answers of change for different social groups expressed as a percentage of total answers given.

Δημόσια Κεντρική Βιβλιοθήκη Κόνιτσας

6.5 Positive and negative changes

6.5.1 Positive and negative changes and biotopes

Changes were in general significantly more negative than positive (χ^2 cross tab, $p < 0.01$). The most negative changes occurred in abandoned (vegetable gardens, old fields) or intensively used by tourist places (e.g. river) (see Figure 17). The most positive change occurred in the pine plantation and generally changes were more positive than negative in all the forested areas expect of sclerophyllous oak forest and fir forest where only negative change occur (because of the construction of a new forest road). In the areas close to the village the opinions were divided about positive or negative changes.

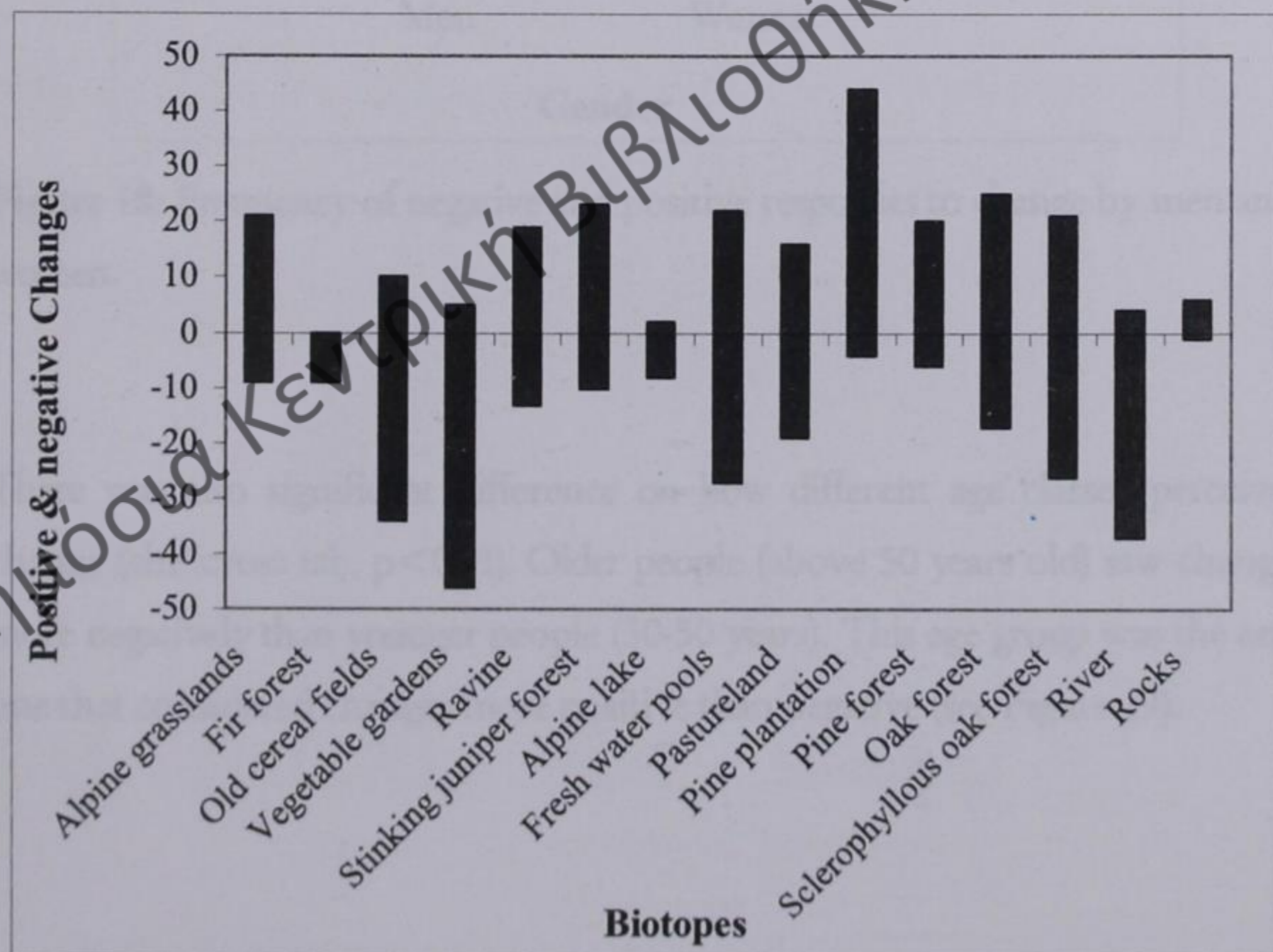


Figure 17: Frequency of responses for negative and positive changes for different biotopes.

6.3.1 Positive and negative changes and features

Changes were in general significantly more negative than positive (chi-square test, $p < 0.01$). The most negative changes occurred in standards (negative changes: 44.4%), in the number of teachers (negative changes: 33.3%) and in the number of pupils (negative changes: 33.3%). The most positive changes occurred in the provision and quality of changes were more positive than negative in all the treated areas except in the provision of a new forest road, in the area close to the village of Koni, where a road was added that positive as a positive change.

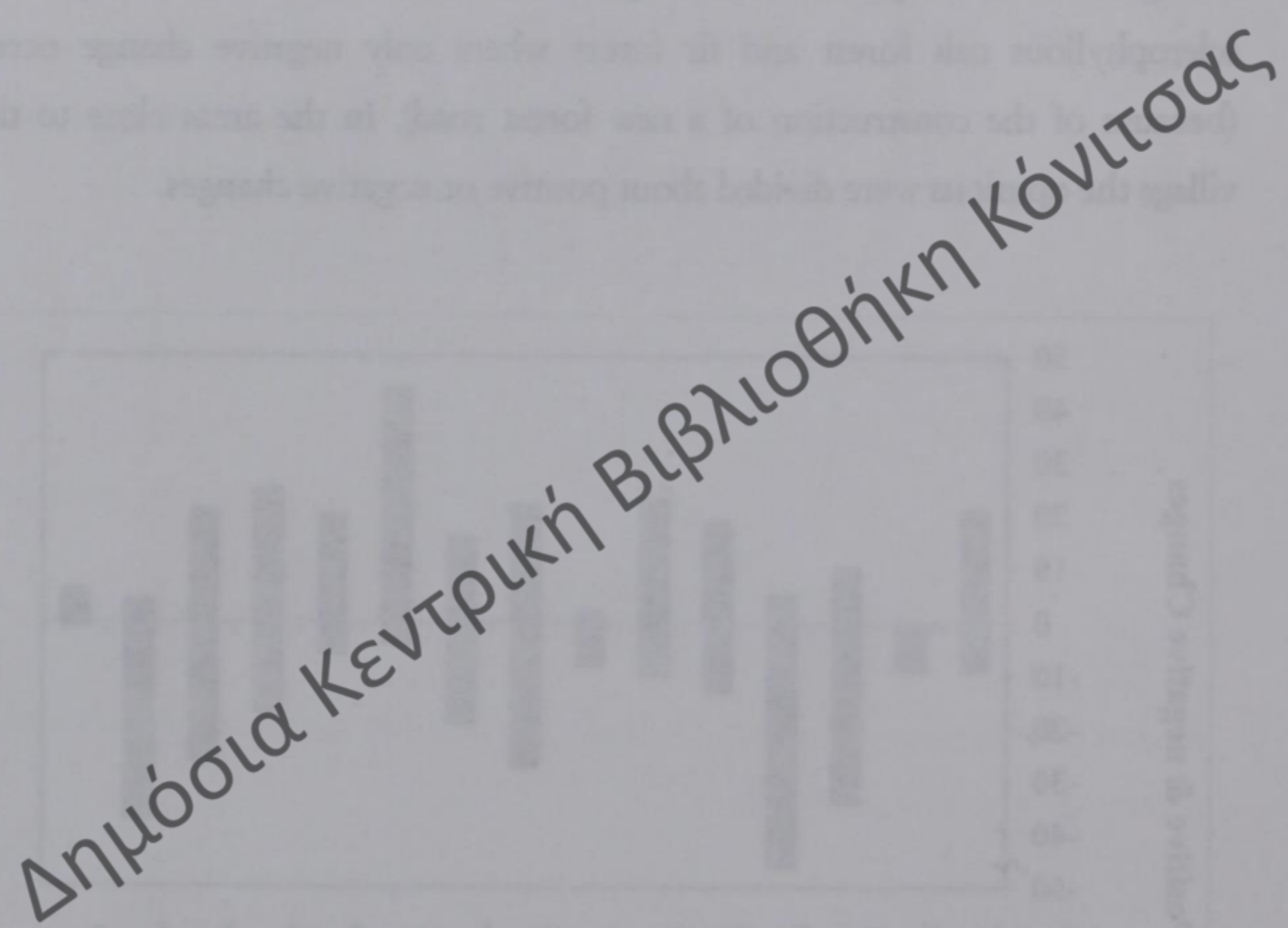


Figure 12. Frequency of responses for negative and positive changes in different features.

6.5.2 Positive and negative changes and social groups

Women significantly more frequently were considered changes negative (χ^2 cross tab, $p < 0.01$) than men (see Figure 18).

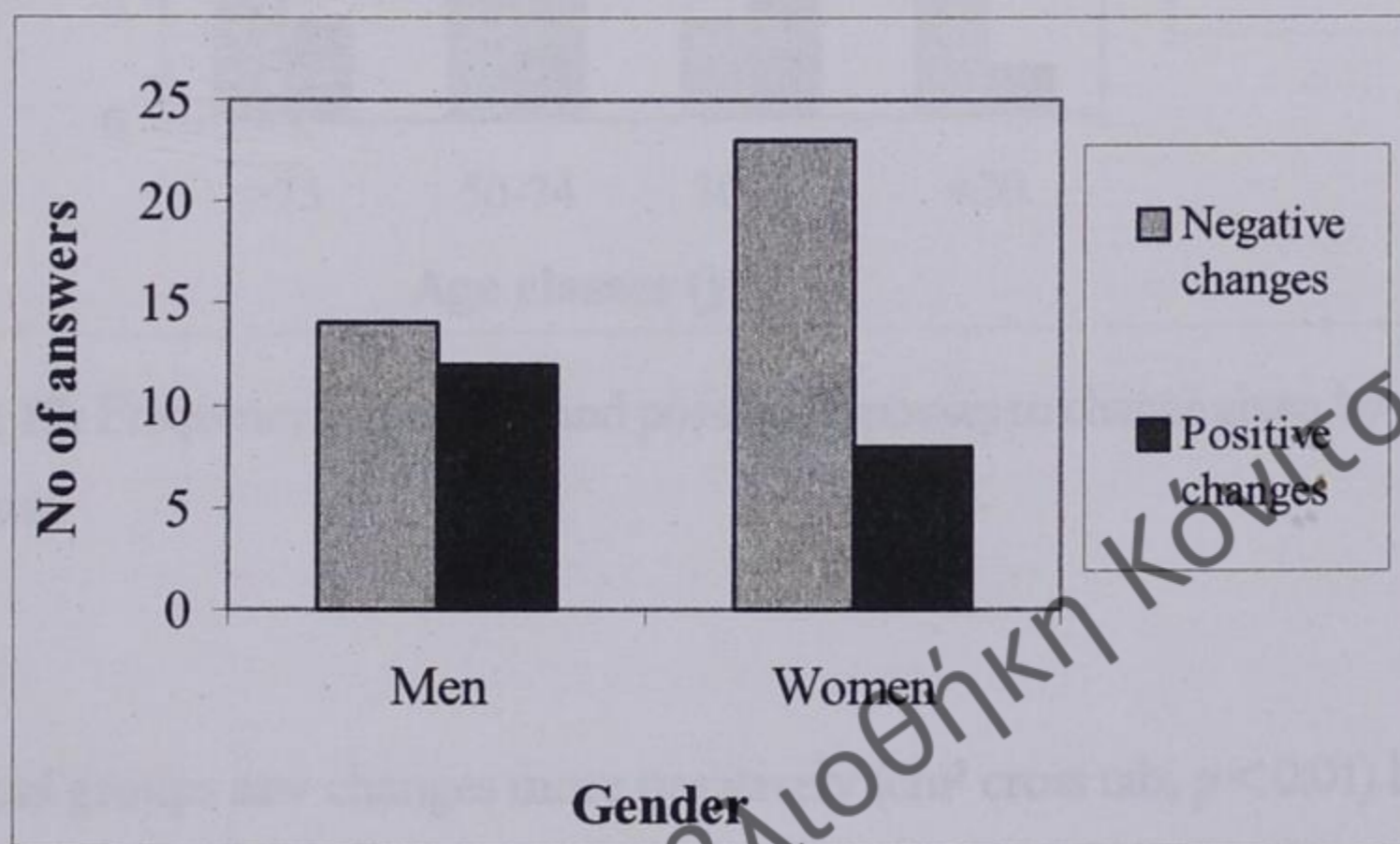


Figure 18: Frequency of negative and positive responses to change by men and women.

There was also significant difference on how different age classes perceived change (χ^2 cross tab, $p < 0.01$). Older people (above 50 years old) saw changes more negatively than younger people (30-50 years). This age group was the only one that considered changes more positive than negative (see Figure 19).

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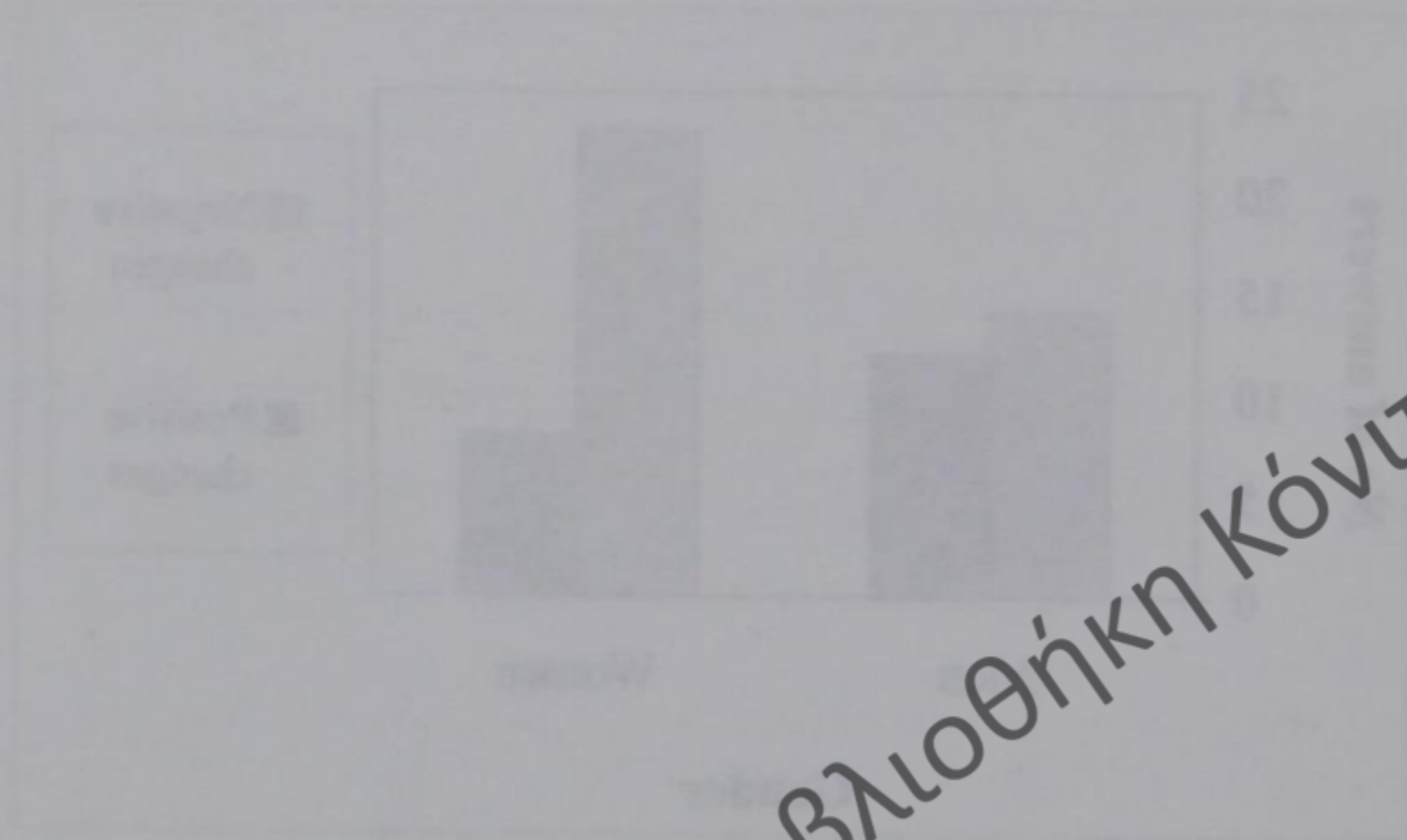


Figure 18: Frequency of negative and positive changes in women and men

There was also a significant difference on how women and men perceived changes (the effect size $d = 0.21$). Older people (above 50 years old) were more negatively than positively people (50-59 years). This age group was one that experienced changes more positively than negatively (see Figure 19).

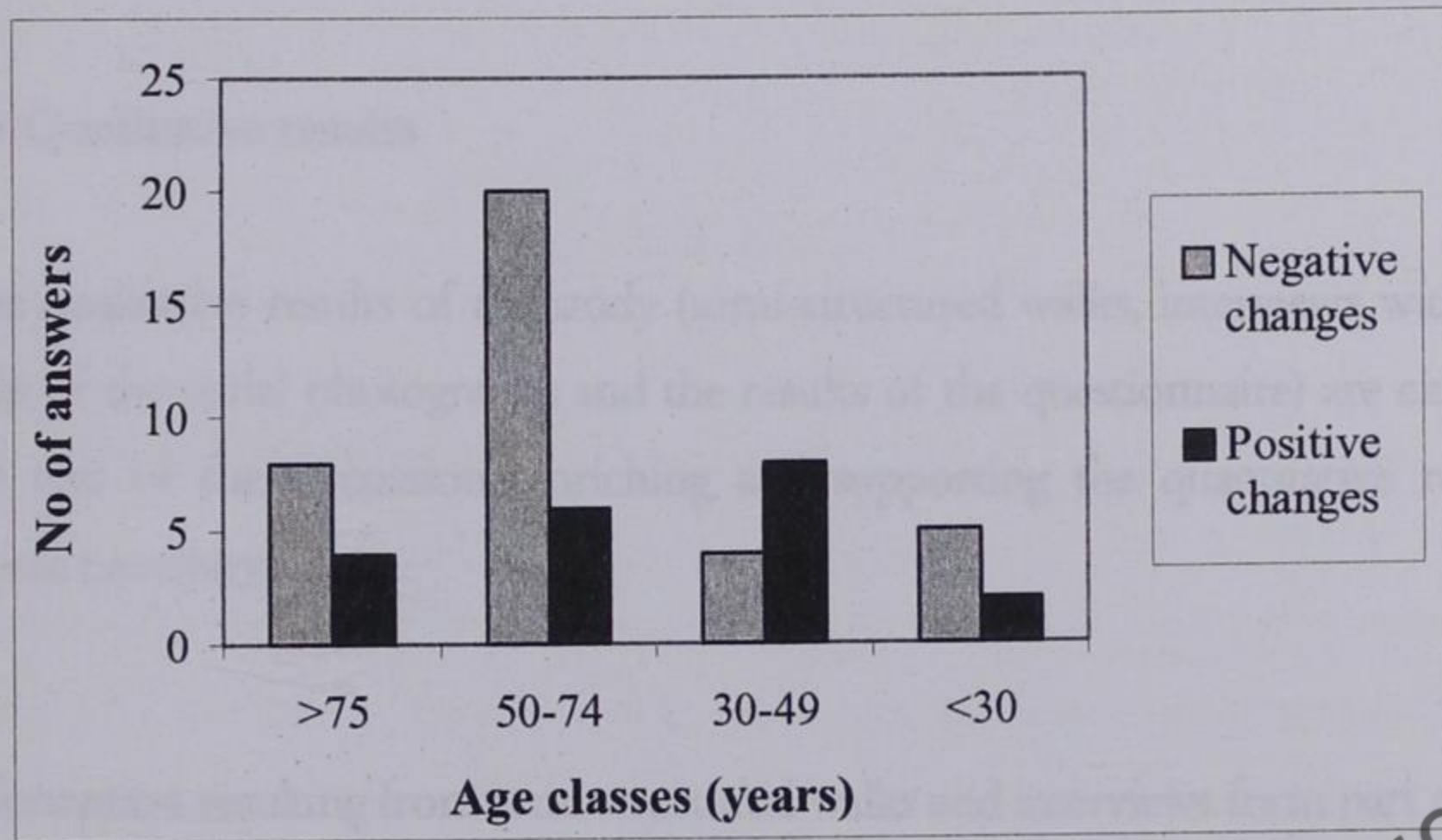


Figure 19: Frequency of negative and positive responses to change given by different age classes

All social groups saw changes more negatively (χ^2 cross tab, $p < 0.01$) but in locals this contrast was more obvious (see Figure 20).

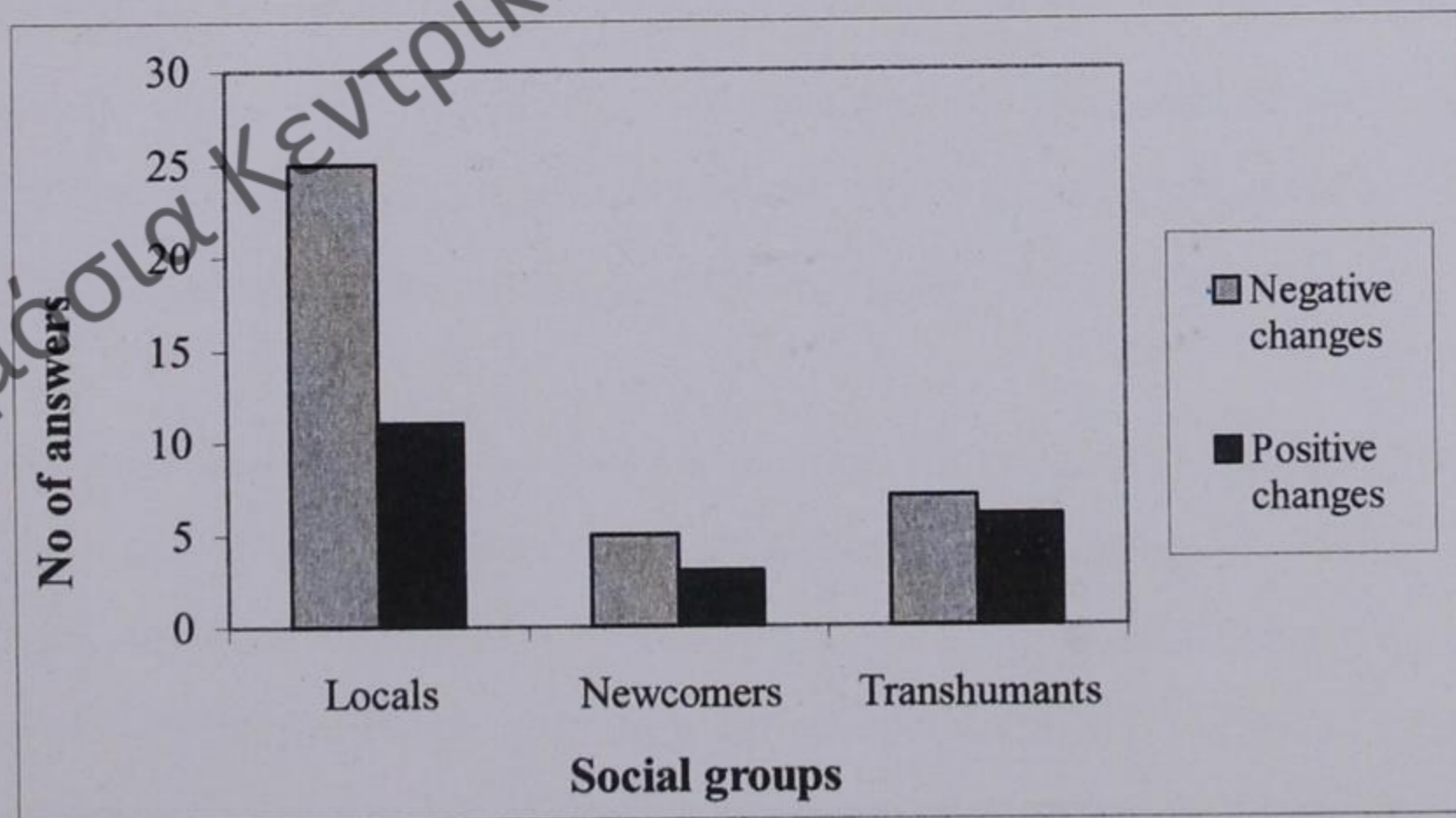


Figure 20: Frequency of negative and positive responses to change given by different social groups

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Fig. 29: Frequency of negative and positive responses to change by different age classes.

All social groups are changing negatively (the case is: $p < 0.05$) but in local this context was more (see Figure 25).

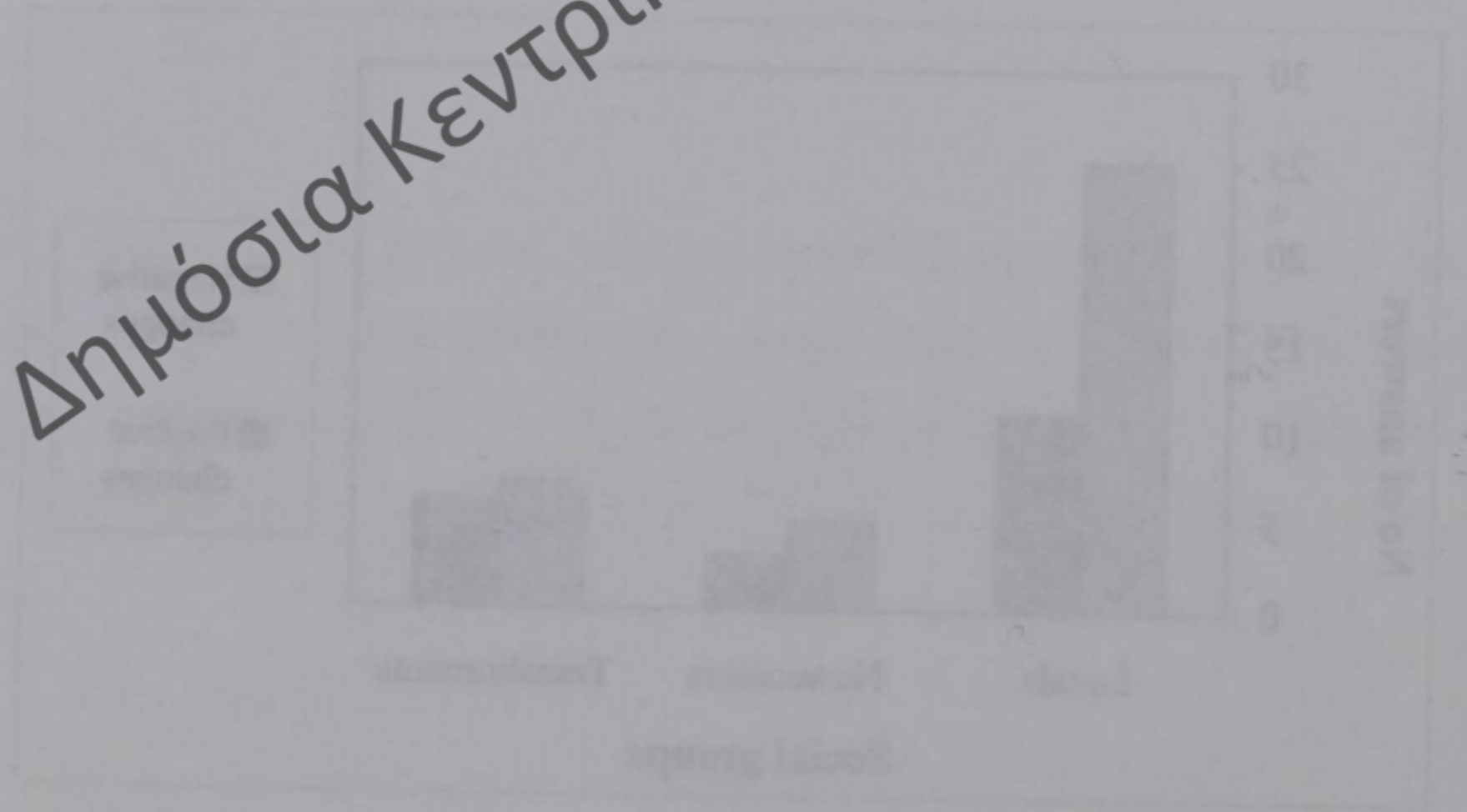


Figure 30: Frequency of negative and positive responses to change by different social groups.

6.6 Qualitative results

The qualitative results of the study (semi-structured walks, interviews with the help of the aerial photographs and the results of the questionnaire) are cited in the text of the discussion, enriching and supporting the quantitative results where necessary.

Information resulting from semi-structured walks and interviews form part of the chapter “types of land utilization” (Section 7.1). The results of the questionnaire referring to opinions of people about the national park are cited in the last sub chapter of the above entitled “traditional and modern protection systems” (Section 7.1.6). The rest of the results of the questionnaire referring to changes in biodiversity are cited in the corresponding sub chapter of the chapter “perceived change in the cultural landscape” (Section 7.3.2).

Δημόσια Κεντρική Βιβλιοθήκη Κονίτσας

The qualitative results of the study (semi-structured and focus group interviews) were analysed in the help of the axial photographs and the results of the questionnaire are cited in the text of the discussion, enriching and supporting the quantitative results where necessary.

Information resulting from semi-structured talks and interviews form part of the "open or semi-structured" (Section 4.1). The results of the questionnaire research of people about the national part are cited in the last sub-chapter of the book entitled "national and academic protection system" (Section 4.1.6). The results of the questionnaire relating to changes in biodiversity are cited in the concluding sub-chapter of the chapter "perceived change in the cultural landscape" (4.1.7).

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7. DISCUSSION

7.1 Types of land utilisation

All the land inside the boundaries of the area was well used for a variety of purposes and that fits very well with the words of Blondel & Aronson (1999) who say that “ apart from sheer, vertical cliffs there is probably no square metre of the Mediterranean that has not been directly and repeatedly manipulated and, one might say, ‘redesigned’ by humans” (Blondel & Aronson, 1999, p.199).

The most intense human pressure existed in the zone of *Quercus* where the settlements are also located expanding into the rest of the area according varying population pressures during the course of history. Above the villages sacred groves of pruned trees restrained soil and water erosion and thus protected them from natural disasters, a quiet common phenomenon in mountain regions (Hewitt, 1997). Vine plantations occupied the drier slopes below the villages while irrigated gardens and orchards occurred in all the valleys around water sources and creeks near by the settlements.

Poorer soils mainly overlying flysch were used for grazing in the past, while at present, as other activities have been reduced, grazing is taking place everywhere. However livestock, which are generally used to maintain some openness in the landscape after agricultural abandonment, caused terrace wall degradation by trampling in the study area, as well as in other places of Mediterranean (Farina, 1998).

5. DISCUSSION

5.1 Types of land utilization

All the land inside the boundaries of the area was well used for a variety of purposes and this was well with the words of (Bland & Atkinson (1997) who say that " apart from their, varied uses there is probably no square metre of land that has not been directly and effectively managed and one might be forgiven by (Bland & Atkinson, 1997, p.197).

The most intense agriculture existed in the zone of Ouzes where the settlements are also located. The rest of the area surrounding varying population pressures of the course of history. About the village raised groves of panned trees, soil and water erosion and this protected them from natural disaster, a common phenomenon in mountain regions (Hester, 1997). The phenomenon of the steep slopes below the village while irrigated gardens and orchards were found in all the valleys around water sources and creeks near by the settlements.

Forest soils mainly covering forest were used for grazing in the past, as present as other activities have been reduced. Grazing is taking place everywhere. However livestock, which are generally used to maintain some openness in the landscape after agricultural abandonment, caused some well degradation by trampling in the study area, as well as in other places of (Muller, 1998).

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Land use in the area, as has emerged from historical evidence, semi structured interviews, photographs-scoring and analysis of aerial photograph can roughly be divided into the following six categories:

- Cultivation,
- Fodder collection,
- Grazing,
- Fuelwood and timber collection,
- Collection of non vascular plants and other non-timber products and
- Traditional and modern protection systems.

Δημόσια Κεντρική Βιβλιοθήκη Κόνιτσας

Land use in the area, as has emerged from historical evidence, was structured
intensive, photo-ethnographic and analysis of aerial photographs can roughly
be divided into the following six categories:

- Cultivation
- Fodder collection
- Grazing
- Fuel-wood and timber collection
- Collection of non-wooden plants and other non-wooden products and
- Traditional and modern production systems

Δημόσια Κεντρική Βιβλιοθήκη Κόνιτσας

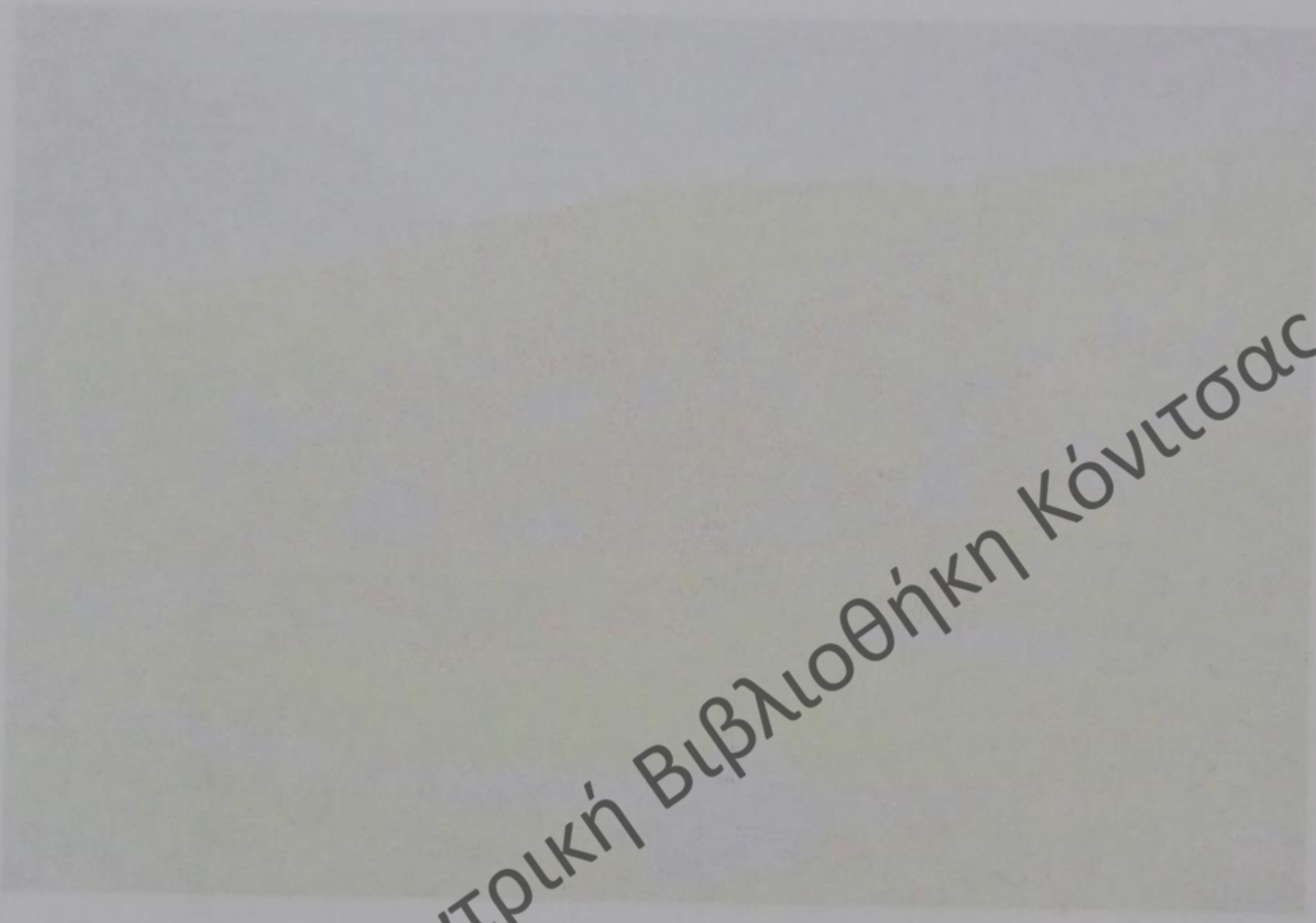
7.1.1 Cultivation



Photograph 2: Abandoned fields located just below the alpine meadows. These isolated fields were the first to be abandoned as past as the beginning of the 20th century.

As in most mountainous regions of Greece, wheat, barley and rye were the main crops cultivated in the area. In times when the population pressure was higher cereal cultivation was expanded in all the areas above the village up to the alpine meadows where the slopes were transformed into terraces with stonewalls in order to reduce soil erosion and facilitate the practice of agriculture (see Photograph 2).

Historical evidence based on an inventory of 1906 confirmed the results of the photograph scoring according to which the oldest participants in the study used



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Photograph 2. Aerial view of the village of Konița, showing the main square and the surrounding buildings. The village is situated in a valley, and the surrounding area is mostly agricultural land.

As in most mountainous regions of Greece, wheat, barley and corn are the main crops cultivated in the area. In times when the population pressure was higher, cereal cultivation was expanded to all the areas above the village up to the alpine meadows, since the slopes were transformed into terraces with stone walls in order to reduce soil erosion and facilitate the practice of agriculture (see Photograph 2).

Historical evidence based on an inventory of 1842 confirmed the status of the photograph showing according to which the oldest part of the village is the main square.

a variety of different places as agricultural land (see also Figure 5). In this inventory are mentioned 1941 cereal fields, 947 irrigated gardens and 608 vineyards located in 203 named sites (see Table 12). Although in most of the cases the plots were less than ½ acre the numbers are astonishingly high.

Table 12: Types of cultivation land and number of plots in study area, from 1906 inventory.

Cultivated land in 1906	No. of plots or fields
Irrigated gardens	947
Vineyards	608
Cereal fields	1941
Fallow cereal fields	283
Fallow vineyards	23

Remote isolated fields were the first to be abandoned as past as the beginning of the 20th century.

According to the interviews, cereal cultivation in fields located nearer to the village generally lasted until 1950, when depopulation of the village denoted the beginning of a new era. After 1960 some of the fields continued to be cultivated until very recently to yield pulses for the livestock. This change was observed from the photograph scoring as decrease of cultivation and increase of livestock were given as reasons for visits in different time periods (see also Figure 5).

Around 1950, or a little earlier, the abandonment of vineyards also occurred and there are none left today. Irrigated gardens (mainly planted with a local variety of butter beans famous in the wider area) and orchards (with many varieties of apples, cherries and pears) lasted much longer as they were closer to the village

a variety of different places as agricultural land (see also Figure 5). In this inventory we mentioned 1941 cereal fields, 947 irrigated gardens and 608 vineyards located in 203 named sites (see Table 12). Although in most of the cases the plots were less than 1 ha the numbers are remarkably high.

Table 12. Type of cultivation land and number of plots in study area, from 1950 inventory.

Cultivated land in 1950	No. of plots or fields
Irrigated gardens	947
Vineyards	608
Cereal fields	1941
Other cereal fields	283
Other	11

Researcher's notes: fields were the most abundant as part as the beginning of the 20th century.

According to the interview, cereal cultivation is located near to the village generally from 1950, when deposition of the fields denoted the beginning of a new era. After 1980 some of the fields continued cultivated until very recently as field pulses for the livestock. This change was noted from the photographs showing a decrease of cultivation and increase of livestock were given as reasons for sites in different time periods (see also Figure 5).

Around 1950, or a little earlier, the abandonment of vineyards also occurred and there are some left today. Irrigated gardens (mainly planted with a local variety of bitter bean tomato in the water area) and orchards (with many varieties of apples, cherries and pears) listed much longer as they were closer to the village.

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in areas with plenty of water. People from Megalo Papigo were these first to abandon these gardens after 1975, when mains water supply was provided directly to the houses. Vegetable gardens smaller in expanse were then created in the yards of the houses. In Mikro Papigo there are a few people who still cultivate these 'original' vegetable gardens.

Abandonment of agriculture resulted not only in changes to the landscape mosaic but also on the extinction of species and varieties of economic value and genetic diversity selected and "improved" over centuries. Only 8 varieties of wheat exist in Greece in present, while in 1930 the number of wheat varieties was 80 (Catsadorakis, 1999). The 'black wheat' that local people remember as a special variety well adapted to the area may belong to these lost varieties.

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in areas with plenty of water. People from black Japan were that far to
shelter their gardens after 1975, when water was supply was provided
directly to the house. Vegetables garden usually in gardens was that created
in the year of the house in black Japan there are a lot people who will
cultivate these 'original' vegetable garden.

Abandonment of agriculture resulted not only in changes to the landscape
mosaic but also on the extinction of genes and varieties of economic value and
genetic diversity selected and "improved" over centuries. Only a fraction of
the crop is present in Greece in present while in 1980 the number of wheat varieties
was estimated (1997). The black wheat, that local people remember as a
special variety adapted to the area may belong to these few varieties.

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7.1.2 Fodder

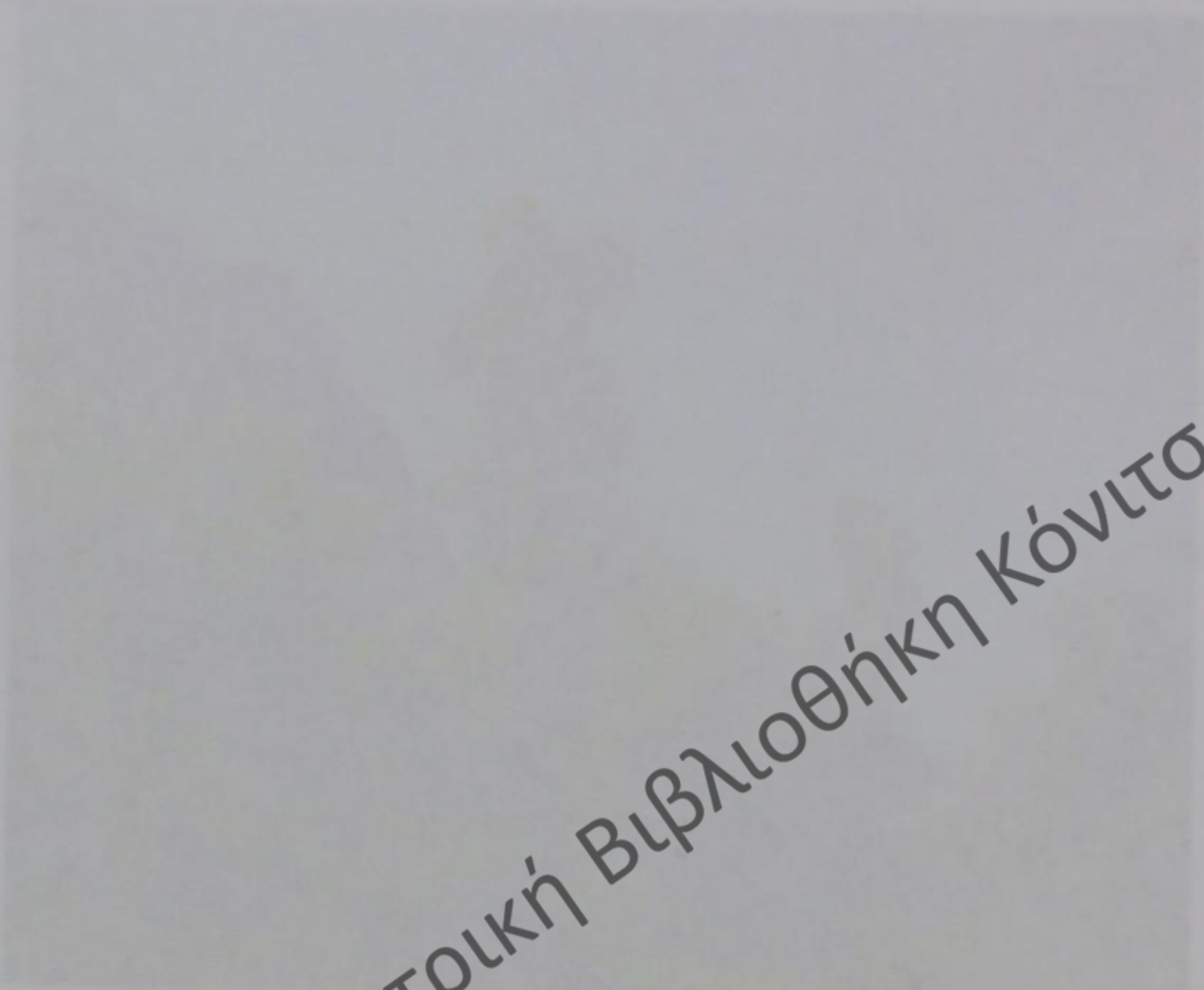


Photograph 3: Trees pruned to provide foliage fodder. There are only few people who still use this practice today.

On the edges of terraced fields man-modified mixed woody and herbaceous plant communities were preserved to provide fodder. This practice created 'wildlife corridors' favourable for many species among agricultural land and it is recommended today as a management practice to preserve biodiversity on farmlands (Tucker & Evans, 1997).

All trees on the farmland were pruned (see photograph 3), either at the end of August (*Carpinus orientalis*, *Carpinus betulus*, *Acer platanoides*, *Ostrya caprinifolia*, *Tilia spp.*) or a month later (all the broadleaved *Quercus* species) and the foliage was

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stacked to be used as winter fodder mainly for the goats. The herbaceous plants that were growing below these trees on the edges of the fields were also used as fodder for the rest of the domesticated animals: sheep, ox, and cows.

In hard winters the shortage of fodder for livestock forced people to prune evergreen trees near the village (*Quercus coccifera* and *Acer sempervirens*), inside the gorge (*Quercus ilex*) or higher up to the mountain (mainly *Juniperus foetidissima*). The practice of pruning has have existed in the area since ancient times. There is evidence that all tree taxa declined over the Neolithic period (6,000-5,000 BP) in Greece, (for example *Fraxinus*, *Ulmus*, *Tilia* and *Acer*) tended to be those described as the most likely to be exploited by Neolithic people for their uses as leaf-fodder (Willis, 1992b).

Additionally, until 1930 women used to climb up to the narrow meadows among the vertical cliffs to collect *Vicia* spp. They also used to collect the foliage of trees (e.g. *Tilia* spp.) growing on steep rocky slopes inside the gorge as fodder for their livestock.

The photograph scoring exercise appeared to confirm these activities as women reported visiting these areas for fodder collection (see Figure 4) more than men and the practice declined over time (see Figure 5).

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7.1.3 Grazing



Photograph 4: Local woman shearing a goat. Throughout Greece, goats as there are well adapted to the rocky terrain and can graze the sclerophyll shrub cover used to provide up to 65% of the family income.

The areas where grazing was available were strictly defined by the local community and only at specific times of the year (i.e. after harvest) were the animals allowed to reach the village. The alpine meadows were rented to transhumants and the areas close to the village were for the animals of the villagers, which were grazed as one herd.

These animals were divided into groups (all the sheep together, the goats together) and subgroups (the milking, the sterile which were not successfully

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mated in the summer etc). Some of them (e.g. the last season's females, the males after the mating season and the oldest before butcher) were enclosed, after the collection of the fodder, into the narrow meadows among the vertical cliffs. The entrance was closed with branches, and animals kept there as long as the grass and water supply allowed. Survival in these conditions wasn't always easy especially for young animals. Those that couldn't survive constituted food for vultures and often large raptors which were more common than today. Thus, there were specific places and routes for different animals at different seasons. Today only one family is left still using this system.

As the areas closest to the village were used exclusively by the village herds, local shepherds with large numbers of animals were sent further on to the mountain during the summer and in defined areas inside the ravine during the winter. The ravine with its milder climate was claimed to provide grazing to 2,000 sheep and goats during winter (Labridis, 1889).

Most of these animals were goats that are well adapted to the rocky terrain and can graze the sclerophyll shrub cover (see Photograph 4). Throughout Greece, these animals used to provide up to 65% of the family income (Naveh & Lieberman, 1984) and according to the locals they used to belong to many different races. Today although grazing is still carried out in the area (see also figure 2) according to municipality data the number of grazing animals is less than 550 (403 goats, 78 sheep and 27 cows). Before 1970, the number of animals exceeded 2,500 (1,500 of which were goats) (Nanouri & Tsiokanos, 1999).

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... in the summer etc. Some of them (e.g. the last winter) females the males
after the rainy season and the other before (but) was reduced after the
collection of the fodder into the narrow meadows among the vertical cliffs. The
countryside was closed with fences, and animals kept close as they as the grass
and water supply essential. Various in these conditions were shown very
especially for young animals. These the outdoor market concerned land for
villages and other large towns which were very common than today. Thus
there were specific places and areas for different animals at different seasons.
Today only one family is left keeping the goats.

As a result in the village were well established by the village heads
local sheep and goat herds of animals were sent further on to the
mountain during the winter and in the spring they made the trips during the
winter. The reason was that the climate was changed to provide pasture to
2,500 sheep and goats during the winter (1887).

Most of these animals were goats that are related to the rocky terrain and
can graze the sclerophyll shrub cover (see Phytogeography Through Greece,
these animals used to provide up to 65% of the milk (Natch 80
Lieberman, 1984) and according to the local they used as many
different races. Today although grazing is still carried out in the area also
figure 2) according to municipality data the number of grazing animals is less
than 500 (400 goats, 78 sheep and 22 cows). Before 1970, the number of
animals exceeded 2,500 (1,500 of which were goats) (Natch 80 Lieberman,
1984).

1997

7.1.4 Fuelwood and timber collection

As all the places near the village were cultivated and the trees were preserved to yield fodder for the livestock fuel wood was very valuable and its collection and consumption was done carefully. Hazel (*Corylus avellana*), which grows widely throughout the area was exclusively used for fuel. Moreover, a big part of the needs of the family for cooking was covered by the remaining branches of the leaf-fodder.

Trees that no longer produced a high quality of leaf-fodder were selectively cut for fuel. Certainly the need for wood was so great at the beginning of the century that several responders stated that they used to walk hours a long distance in to the ravine to collect tree trunks carried down by the river during the winter.

As trees around the village were not to be cut in the past people were going to the gorge for their timber needs for construction. Some of the responders spoke about one of the narrow meadows among the cliffs where stumps or tree trunks can still be found.

Collection of timber and fuel-wood received lower scores compared to other activities but it is possible that these scores were underestimated, as the practice is now illegal. Today most heating needs are covered by petroleum carried from the nearest town.

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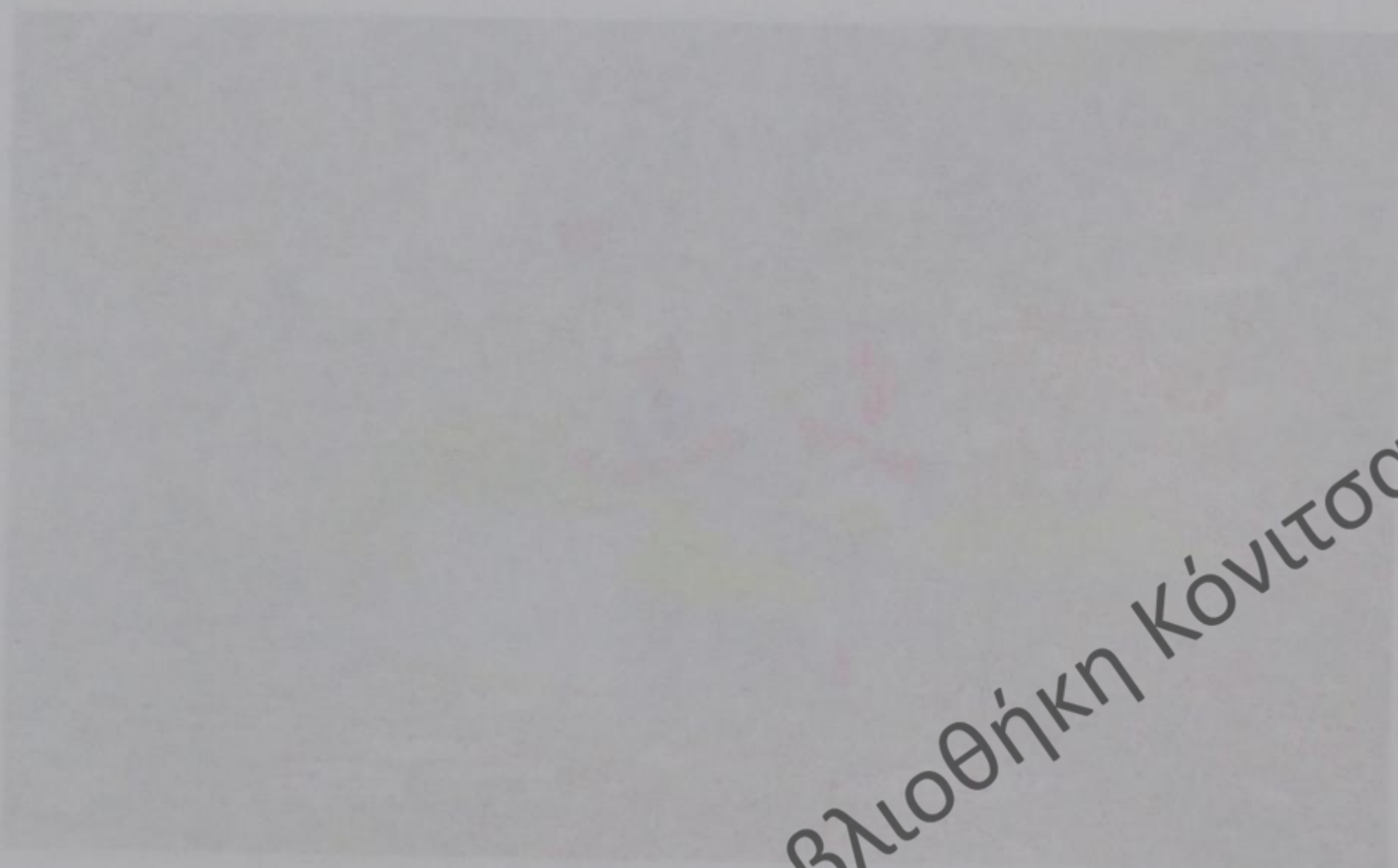
7.1.5 Collection of vascular plants and other non- timber forest products



Photograph 5: Local collectors of mountain tea (*Sideritis spp.*). The herb must be dry before consuming.

More than anywhere else in Europe, Mediterranean woodlands have traditionally been used for many other services and products in addition to wood (Blondel & Aronson, 1999).

Thus, it is not surprising that the collection of non-timber products is the third most frequent reason for visiting an area (see Figure 3). As was expected it was women and locals (see Figures 4 and 6) who were most occupied with such activity. Moreover people collected more products in the past than in present but this activity is still common today (see Figure 5).



Photograph 5. Local vegetation of the study area. The herb may be the
same as in the previous photograph.

More than 100 species of plants were collected in the study area. In addition to the
plants used for medicinal purposes and products in addition to the plants
collected in the study area.

It is not surprising that the collection of non-forest products in the study
area is very low compared to other studies in the area (see Figure 7). It was expected it was
higher and lower than Figure 4 and 5) who were more concerned with
activity. However, people collected more products in the past than in present but
this activity is still common today (see Figure 7).

Most of these non-timber products are edible (see Table 17: reasons for visits in Appendix 3:), while often may have had obscure peculiar uses; e.g. teenagers used to go to the alpine lake and collect the feathers of vultures (*Gyps fulvus*) to be sold to local musicians for use as pens.

Among the products the mountain tea (*Sideritis spp.*) is still very important in the social life of the inhabitants, as it remains one of the most common gifts exchanged between relatives and friends from other areas (see Photograph 5).

The leaves of Good King Henry (*Chenopodium bonus henricus*) were collected from the alpine meadows and dried to be used during winter to make a kind of pie and there are still people who collect it.

Hazel nuts (*Corylus avellana*) collection however, appeared to have been a very common activity in the past which has recently stopped. Most people mentioned it in the photograph scoring as a past activity but none as a present one.

Collection of medical plants was generally absent from interviews and explications about reasons for visits. Moreover, almost all the informants (except of one) considered that the 'Vikogiatroi' or 'medicine men from the Vikos gorge', who were supposed to have collected renowned herbs from the gorge were either a legend or disappeared a long time ago. Labridis (1889) mentions that these medicine men exercised their lucrative but not highly thought of profession from 1670 and they spoke their own language, a kind of cant not be understood by others (Labridis, 1889).

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7.1.6 Traditional and modern protection systems

In the past all the land uses mentioned above operated in a strict system of local organization, which defined the rules and punished the transgressors. The local community were quite wealthy from the income of rent for the alpine meadows and money from bequests of rich “travellers” and were able to operate the school, to pay a doctor, a parochial community officer and a field guard.

The local community decided the period time when villagers were allowed to collect fodder from the meadows among the cliffs and it regulated the pastures both of transhumants and locals. These prohibitions in combination with other religious restrictions were able to keep the system in balance until the years of the Second World War.

Conservation through religion is a common practice in many different places all over the world (Sharma et al. 1999; Anderson, 1993; Tuxill & Nabhan, 1998) often working very well in order to protect the biota (Chandran & Hughes, 2000), as breaking the religious law may cause misfortune, fires, floods, diseases, windstorms, earthquakes, insect plagues

In the study area eight groves characterized as sacred or “excommunicated” in order to avert use, were identified by interviewing people with the help of the aerial photographs. Nevertheless, exceptions might be allowed in times of need and often the rule changed easily when the reasons were purely religious, as seen in other societies (Chandran & Hughes, 2000). For example, the place where is now the pine plantation is claimed to be a juniper forest, which was cut in order to construct the central church of Megalo Papigo. As this forest was just above the village reasons of security against erosion enforced its plantation

In the past all the land was partitioned above ground in a local system of local organizations, which defined the rules and punished the transgressors. The local community was quite wealthy but the extent of risk for the whole community and money from payments of risk "voluntary" and was able to operate the school to pay a doctor, a parochial community officer and a field guard.

The local community decided the period time when villages were allowed to collect fodder from the meadows among the cliffs and it regulated the patterns of work and rest. These prohibitions in combination with other religious rules were able to keep the system in balance until the years of the Second World War.

Conversions through religious conversion practice in many different places all over the world (Gunnarsson et al., 1997; Tull & Nelson, 1998) often working very well in order to protect the place (Chandran & Hughes, 2000) as breaking the religious law may cause serious loss, floods, disease, windstorms, earthquakes, insect plagues.

In the study area eight groves characterized as sacred or "consecrated" in order to avoid use, were identified by interviewing people with the local and oral photographs. Nevertheless, religious might be allowed in terms of need and often the rule changed early when the reasons were purely religious as seen in other societies (Chandran & Hughes, 2000). For example, the place where a now the pine plantation is claimed to be a juniper forest, which was in order to construct the central church of Megalo Pefko. As the forest was just above the village reasons of security against erosion enforced its plantation

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with pine (mainly *Pinus nigra*) by the Forestry Department in 1959 according to the fashion of that times, although local shepherds were strongly against it.

Although access to these sites was meant to be restricted, infringement regularly occurred. Almost all the informants (even the oldest) remembered them-selves trespassing to the great disappointment of their parents.

After the Second World War these systems of local and religious restrictions broke down. In 1938 the law concerning transhumants changed and they were given the same citizenship and grazing rights as the sedentary villagers of Zagori. As the transhumants had previously had to rent their pastures (Campbell, 1964) this deprived the local community of a large income.

Slowly, the management of the area has passed from local to national level. In 1973 the area was recognized as National Park, established to protect the unique and beautiful landscape and the diverse flora and fauna of the region. Among other things grazing inside the gorge was prohibited which found the local community to be against the park. In that time cultural landscapes and participation of local people in management were little known.

Implementation of a management plan however has never happened. The area to some extent is protected in name only – a so-called ‘paper park’ (Dudley et al. 1999) and grazing has continued along with other illegal uses, as government has never taken the designation seriously.

Absence of protection and management was revealed by the questionnaire that also showed that prohibition of grazing was the main reason that made people object to the idea of the park (see Figure 21).

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with pine (mainly Pinus nigra) by the Forestry Department in 1939 according to the fashion of the time although local shepherds were strongly against it. Although access to these areas was meant to be restricted, in numerous instances occurred. Almost all the laborers (even the others) remained themselves regarding to the great displacement of their parents. After the Second World War these systems of local and religious restrictions broke down. In 1958 the law concerning municipalities changed and they were given the same citizenship and grazing rights as the ordinary villages of the country. As the municipalities had previously had to vote their pasture (Camp) this deprived the local economy of a large factor. Slowly the municipalities have been passed from local to national level. In 1973 the area was recognized as National Park, established to protect the unique and beautiful landscape. Among other things grazing inside the park was prohibited which forced the local community to be against the park. Some cultural landscapes and participation of local people in management were... implementation of a management plan however has never been... to some extent is protected in nature only - a so-called 'green park'... at 1999) and grazing has continued along with other illegal uses as... has never taken the designation seriously. Absence of protection and management was revealed by the questionnaire that also showed the prohibition of grazing was the main reason that made people object to the idea of the park (see figure 21).

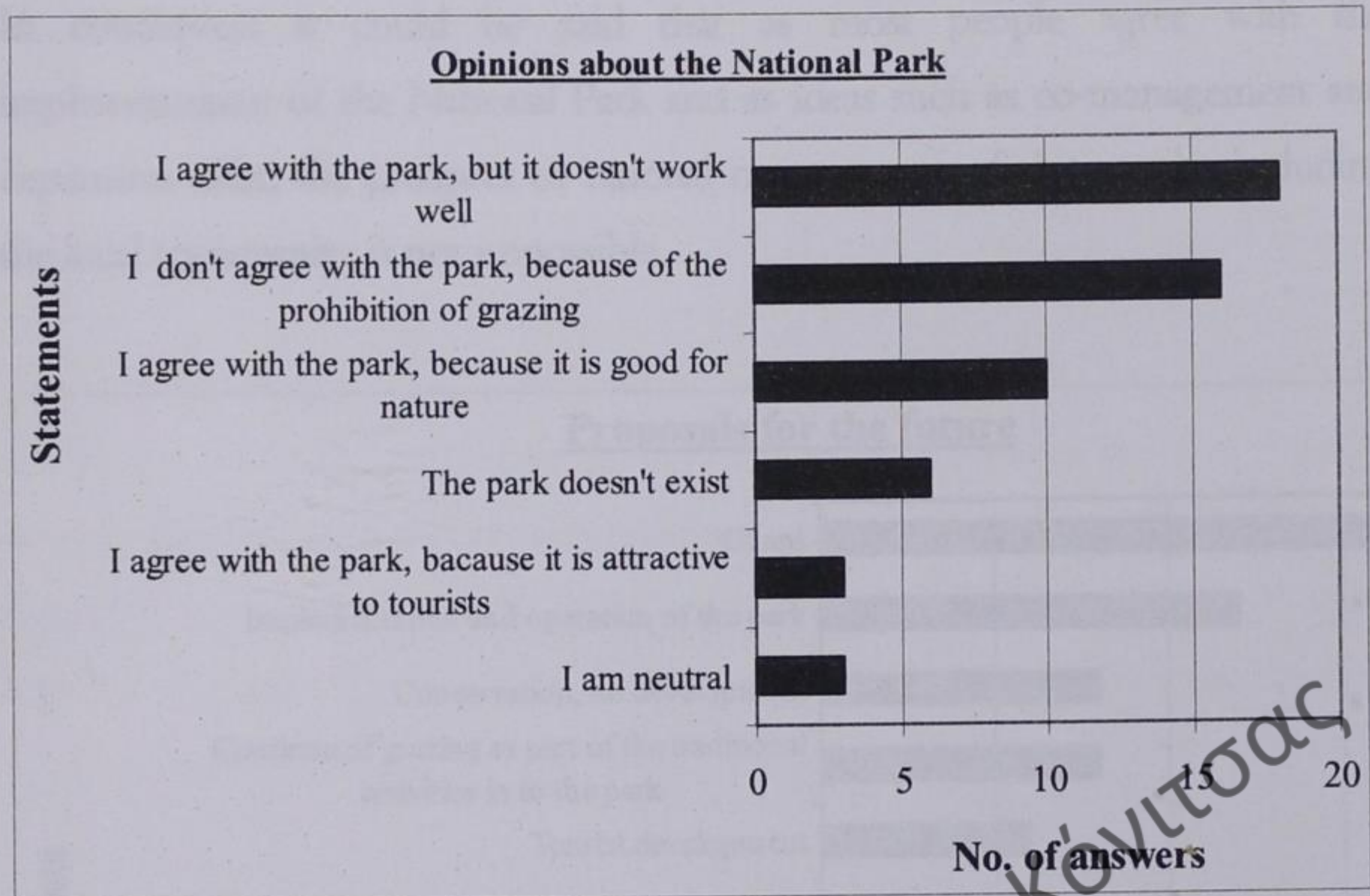


Figure 21: Frequency of responses to statements regarding the National Park, given in the questionnaire.

Local people proposed increased guarding (mainly to stop poaching and illegal fishing) and implementation of the management plan for a better function (see Figure 22). Moreover there are some who think that the National Park and grazing can co-exist, while others see the National Park and grazing as mutually exclusive.

At present the existence of the park doesn't ensure conservation and people are afraid of developments, which could potentially threaten the National Park. In the past many proposals of that kind, e.g. lighting of the cliffs during night, construction of ski lift and other developments have been proposed by outsiders but so far have all been stopped by the local community.

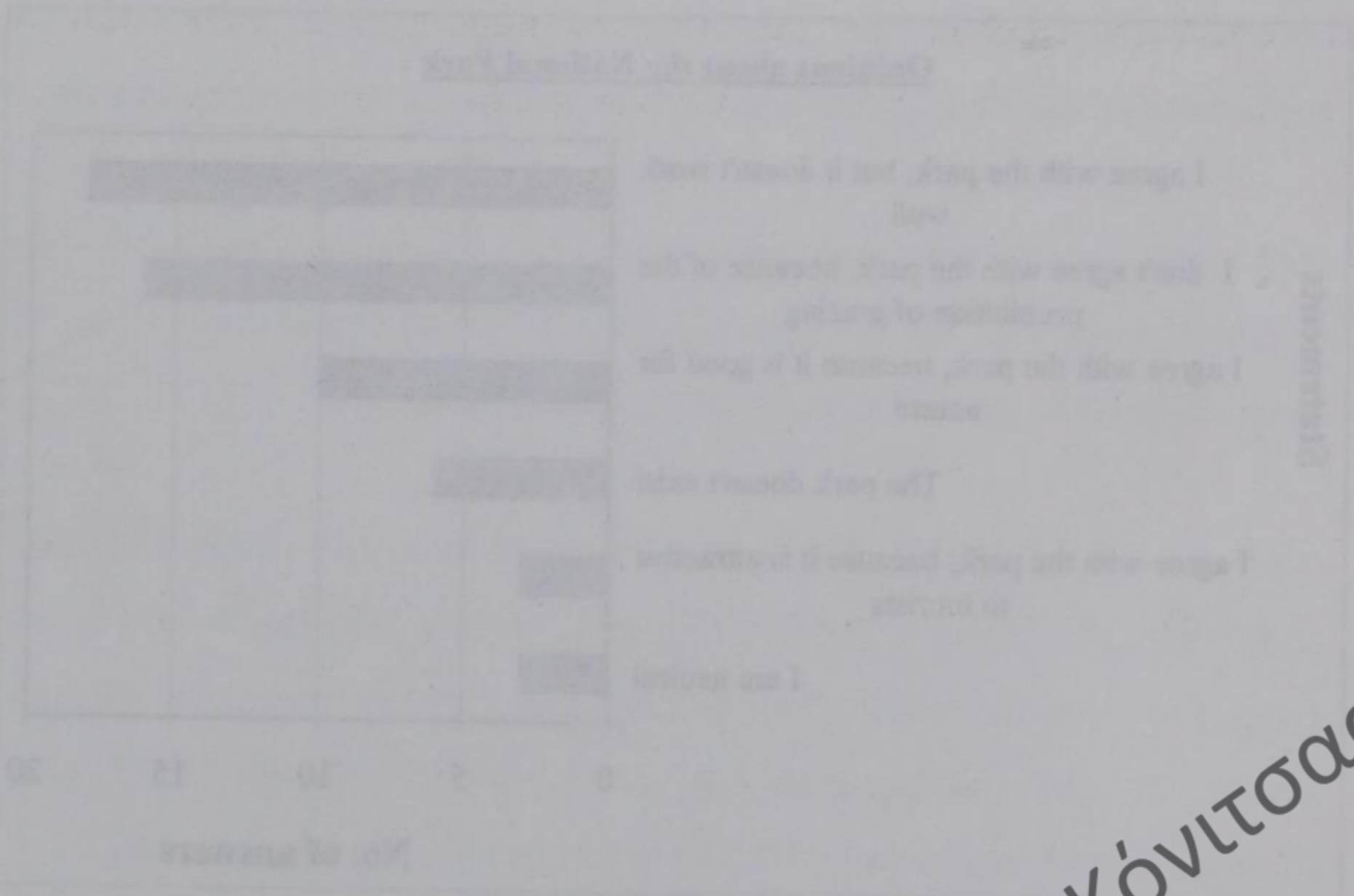


Figure 23: Responses to statements regarding the National Park, given in the questionnaire.

Local people proposed increased quantity to trap poaching and illegal fishing) and implementation of the management plan for a better habitat (see Figure 23). Moreover, there are some who think that National Park and grazing can co-exist, while others see the National Park as being an unacceptably exclusive.

As present the existence of the park doesn't cause controversy and people are kind of development, which could potentially threaten the National Park. In the past many proposals of the park e.g. lighting of the cliffs during night conservation of the life and other development have been proposed by outsiders but so far have all been rejected by the local community.

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In conclusion it could be said that as most people agree with the implementation of the National Park and as ideas such as co-management and expansion exist, the prospect of rational management of the area by including the local community is not impossible.

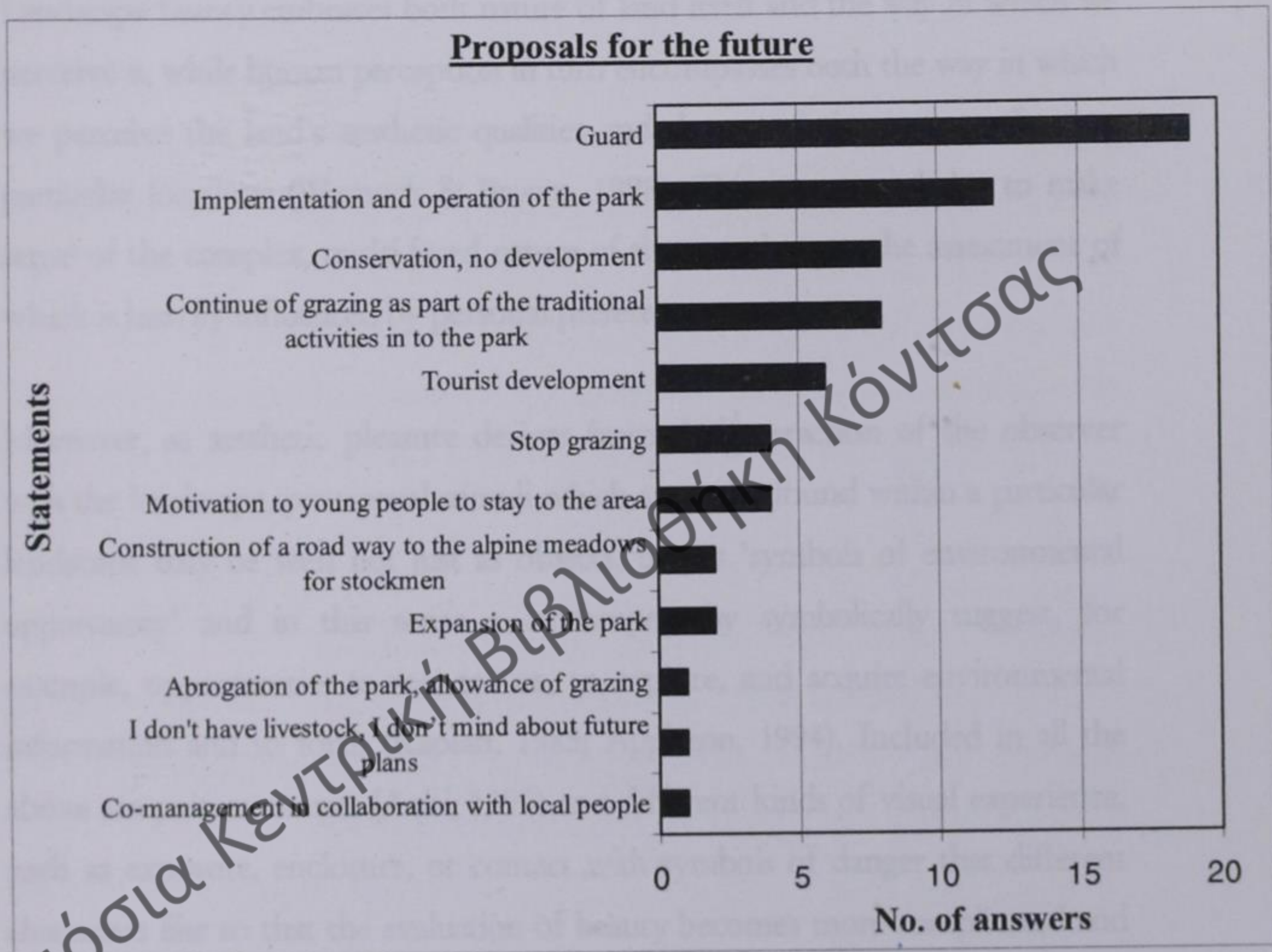


Figure 22: Frequency of different suggestions by locals about the future of the National Park.

7.2 Perceived landscape values

7.2.1 Beauty

Landscape beauty embraces both nature of land itself and the way in which we perceive it, while human perception in turn encompasses both the way in which we perceive the land's aesthetic qualities and the associations we attribute to particular locations (Warnock & Brown, 1998). This statement helps to make sense of the complex, multi-faced nature of the term beauty, the assessment of which is heavily influenced by personal preference.

Moreover, as aesthetic pleasure derives from the interaction of the observer with the landscape, perceptual stimuli which are to be found within a particular landscape may be seen not just as objects, but as 'symbols of environmental opportunity' and in this sense a landscape may symbolically suggest, for example, opportunities to see, to use, to explore, and acquire environmental information and so forth (Kaplan, 1985; Appleton, 1994). Included in all the above are past memories (Aoki, 1999) and different kinds of visual experience, such as exposure, enclosure, or contact with symbols of danger that different characters like so that the evaluation of beauty becomes more complicated and difficult to analyse (Appleton, 1994).

However, for most people, emotional responses are particularly important and such responses are manifested in the associations and values we attach to different landscapes as individuals.

In the study area places scored most highly for beauty (river, alpine lake, gorge, cliffs), (see also Figure 8) are also the main tourist attractions. Apart from the

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7.2.1 Beauty

Landscape beauty evaluation both nature of land itself and the way in which we perceive it, while human perception is not encompassed both the way in which we perceive the land, aesthetic qualities and the associations we attribute to particular features (Yamada & Brown, 1998). The aesthetic value is not a mere of the complex multifaceted nature of the land itself, the assessment of a beauty influenced by personal preferences.

Moreover, aesthetic pleasure derives from the interaction of the observer with the landscape, typical stimuli which are to be found within a particular landscape may be seen as an object, but as a symbol of environmental opportunity, and in this sense, landscapes may symbolically suggest, for example, opportunities to see, to be explored, and acquire environmental information and so forth (Kaplan, 1987; Kaplan, 1995). Included in all the above are past memories (Auld, 1999) and the history of visual experience, such as exposure, enclosure, or contact with symbols that represent that different character like so that the evaluation of beauty becomes more complicated and difficult to analyze (Appleton, 1994).

However, for most people, emotional responses are particularly important and such responses are measured in the associations and values we attach to different landscapes as individuals.

In the study area, places scored most highly for beauty (from above lake, gorge, cliffs), (see also Figure 8) and also the main tourist attractions. Apart from the

river, where degradation as a consequence of tourist pressure is obvious (see figure 13b), the rest of the sites are naturally protected due to access difficulties. These places are also the least changed in recent terms. Moreover, places scored most highly for beauty are the most used at present, where recreation, the main present activity takes place. Although the cliffs and the gorge are still little visited due to the difficulty of access viewing them from a distance is one of the main tourist attractions.

In contrary the less beautiful places (gardens, old cereal fields) are also the most changed places in the short term and are the places used most intensively in the past. The above combined with the local and older people's opinion who think that these places lost their beauty as a consequence of abandonment leads easily to the conclusion that we like what we create, what we use, what mirrors our culture.

As expected, newcomers scored the place higher for beauty than other social groups. Many either make a living from tourism or have invested in property in the area because they consider the village attractive. Transhumants, especially older responders did not rate the area highly for beauty, as for them the main function of the place is utilitarian.

The recognition of vegetation as the main reason of beauty (see also Figure 7) and the equivalence that forest is 'good' is perhaps related to the vulnerability of forest ecosystems in Greece due to summer forest-fires. Also intensive campaigns by the Forestry Service and non-governmental organizations in favour of the forest as beautiful, green, and source of life may have affected public opinion. Conversely, the pastureland is at the same time unchanged and scored low for beauty. This is possibly related to the recent history of the National Park and the conflict over grazing between the government and the

river, where degradation as a consequence of urban pressure is obvious (see figure 10b), the rest of the sites are naturally protected due to access difficulties. These places are also the best changed in recent years. Moreover, places scored most highly for beauty are the most used in present, which is interesting, the main present activity takes place. Although the cliffs and the rocks are well visited due to the difficulty of access viewing them from a distance is one of the main tourist attractions.

In contrast, the less beautiful places (gardens, old rural fields) are also the most changed places in the short term and are the places used more frequently in the past. These show combined with the local and other people's opinions who think that they are not their beauty as a consequence of abandonment leads early to the conclusion that we are what we create, what we use, what nature can change.

As expected, respondents scored higher for beauty than other social groups. Many either make a living from tourism or have invested in property in the area because they consider the village beautiful. Tourists, especially older respondents did not rate the area highly for beauty for that the main function of the place is relaxation.

The recognition of vegetation as the main reason of beauty (see table 7) and the equivalence that forest is 'good' is perhaps related to the importance of forest ecosystems in Greece due to various factors. Also intensive campaigns by the Forestry Service and non-governmental organisations in favour of the forest as beautiful, green, and source of life may have affected public opinion. Conversely, the paradox is at the same time highlighted and scored low for beauty. This is possibly related to the recent history of the National Park and the conflict over grazing between the government and the

local community. As this was the main reason of conflict, the landscape created by this illegal activity was surely not likeable.

Moreover, the study showed that the perception of landscape character changes more slowly than the perception of the condition of landscape (see Figure 7), exactly as landscape character usually changes gradually and slowly compared to landscape condition which can change more rapidly due to the impact of external factors (Warnock & Brown, 1998).

To conclude, it could be said that beauty occurs where use occurs and the most beautiful places are also where human pressure is highest and are consequently the places most vulnerable. Hence management may be required to set up limits to this pressure and possibly spread the pressure over a wider area and more biotopes.

Alternatively it could be said that the place is considered as beautiful because it has certain aspects which appear to be key elements of aesthetic responses: vista, contrast, texture, colour, light (Kellert, 1996). However, aesthetics history suggests that aesthetic responses change according to different fashions at different times (Ingrouille, 1995). Thus, for example pastureland, which concentrated the most negative statements exactly because of the lack of these 'key elements' may be viewed differently in the future.

local community. As this was the main reason of conflict, the landscape created by the illegal activity was rarely not beautiful.

Moreover, the study showed that the perception of landscape character changes more slowly than the perception of the condition of landscape (see Figure 5). Exactly as landscape character usually changes gradually and slowly compared to landscape condition which can change more rapidly due to the impact of external factors (Wernick & Brown, 1993).

In conclusion, it could be said that beauty occurs where one exists and the most beautiful places are also where human pressure is highest and are consequently the places where the landscape management may be required to set up limits to the pressure. It is possible to spend the pressure over a wider area and more biotopes.

Alternatively, it could be said that beauty is considered as beautiful because it has certain aspects which appear to be elements of aesthetic response. Visual contrast, texture, colour, light (Gallagher, 1995). However, aesthetic beauty suggests that aesthetic response change according to different factors in different times (Jagermeier, 1995). Thus, for example, elements which concentrated the most negative responses exactly because of their low elements may be viewed differently in the future.

7.2.2 Importance

In this study, importance scores closely followed beauty scores and were generally high. The fact that newcomers and young people valued the area higher than the rest suggests that this importance has only been perceived recently (see also Table 10).

Importance and beauty appear to be linked perhaps due to the effective definition of the area as beautiful by “significant others” such as politicians, the government and tourists. Moreover, one of the chief reasons that the area became National Park was its landscape uniqueness and beauty. Such values are context sensitive depending on economics, politics and other cultural conditions. Very often local values and knowledge are evolving in response to external knowledge and values. Accordingly, in practice local people often evaluate their environment based on a much broader range of influences (e.g. television) than those considered by the scientists (Cotton, 1996).

Social obligations (e.g. social norms that suggest what people should value) also play their own role in evaluation and can influence the results of any research of that type. For example, young people may have evaluated the place higher than expected for importance in order to be polite and satisfy what they consider the researcher wanted to hear. They may also have wanted to show that they care about “ecology” and possibly influence positively the overall value of their place and the consequences of the study in favour of their community. On the other hand older people who had nothing to gain or lose, as they said, seemed more sincere and direct when they gave low scores without hesitation.

In this study, importance scores closely followed beauty scores and were generally high. The fact that researchers and young people valued the area higher than the rest suggests that the importance has not been perceived recently (see also Table 10).

Importance and beauty appear to be linked perhaps due to the effective definition of the area as beautiful by "significant others" such as politicians, the researcher and tourists. Moreover, one of the chief reasons that the area is beautiful is its landscape uniqueness and beauty. Such values are context dependent on economic, political and other cultural conditions. As values and knowledge are evolving in response to general knowledge, anthropology, in practice local people often evaluate their environment through a much broader range of influences (e.g. television) than those considered by tourists (Gannon, 1996). Social objectives (e.g. social norms that suggest that people should map values) also play their own role in evaluation and can lead to the results of any research of that type. For example, young people may have valued the place higher than expected for importance in order to be polite and to show that they consider the researcher worthy to hear. They may also have scored low that they care about "ecology" and possibly influence positively the overall value of their place and the consequences of the study in favour of their community. On the other hand, older people who had nothing to gain or lose as they said, scored more sincere and clear when they gave low scores without

destination

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The triangulation of the results of the photograph scoring and the paired comparisons confirmed the above result. People evaluated very highly the river and the gorge in the photograph scoring but in paired comparisons these biotopes were the least important. For local older people, especially for women most occupied with every day activities, the area close to the village was the most familiar, 'their own'. On the other hand for transhumants the most familiar area, 'their own' was the alpine zone. Overall, the alpine zone was considered the most important area because it was scored highly by several social groups: transhumants, newcomers and young people who tended to make a living from tourism.

Forests in paired comparisons were in the middle: better than the dangerous gorge, and the 'downgrade' river, worse than the alpine zone and the area close to the village. This is not surprising as "forest" areas are a recent feature of the area: afforested areas up until recently were either agricultural or pasture land. People value living diversity emotionally, intellectually and materially (Kellert, 1996). Classifications of values about the importance of nature exist in a variety of fields from the nine basic values of Kellert (see Table 13), as a way of organizing and describing people's feelings about animals and nature (Kellert, 1996), to preference-based values about national forests (Manning et al. 1999) and values used in biodiversity conservation and protection (Blunden and Curry, 1990; Plotkin, 1995; Cotton, 1996; Sochaczewski, 1999).

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Table 13: Comparison between values found in the literature and in the study area about the importance of nature. **A:** Manning et al. 1999; **B:** Blunden and Curry, 1990; Plotkin, 1995; Cotton, 1996; Sochaczewski, 1999 **C:** Kellert, 1996.

A: National forests values in USA	B: Values for biodiversity /conservation	C: Nine basic Values	Values found in the study area
Economic	Utilitarian or Material	Utilitarian	Utilitarian
Ecological	Ecological	Ecologicistic-scientific	Ecological
Scientific	Scientific		Scientific
Aesthetic	Aesthetic/ Pleasure	Aesthetic	Aesthetic
Moral/ Ethical	Moral/ Ethical values	Moralistic	Moral/Ethical
Recreation	-	Naturalistic	Naturalistic
-	Humanistic	Humanistic	-
Intellectual	Symbolic	Symbolic	Symbolic
Spiritual	Spiritual	-	Spiritual
-	Evolutionary	-	-
-	Personal	-	Personal
-	Social	-	Social
Historical/ Cultural	Cultural	-	Historical/Cultural
Therapeutic	-	-	-
-	-	Negativistic	-
-	-	Dominionistic	-

Although there appear to be many similarities in the classification systems there are fundamental differences in the objectives of the different studies. Biodiversity and protection values are primarily global rather than local, while the study on the Green Mountain National Forest in the USA (Manning et al. 1999) was addressed at the general public rather than to direct users of the area. Kellert's values were focused on people mainly from modern industrial societies

who live near their direct contact with nature or dependence on the land and lead to see nature more as a source of inspiration and recreation enjoyment than as a provider of commodities human use or profit.

Furthermore, the different methodologies that Keller and other authors use focused not only on landscapes and locations but also on animals. As a result, scores of high humanistic scores were recorded in America and Japan (Keller, 1996) and values highly negative to wildlife were observed in Botswana (Gard, 1991, in Keller, 1996). Nevertheless, in the study in the non-industrial countries mentioned values were found to be the most dominant view of nature. The most important values were (Keller, 1996). The results of the present study also confirmed the hypothesis that industrial values are more highly expected of the traditionally used by their inhabitants.

The study also showed that the change and abandonment of traditional land use activities are reflected well in the scores and explanations that people give. Industrial values were more relevant in the abandoned areas no longer in use (see Figure 10). Conversely, in areas 'ecological' reasons are emerging as important as there is no one to look after to "go wild" in the follow old-fields.

The most ecologically valuable places perceived were the gorge, and the river. The last two are also of special conservation interest for reasons of change and endemic plants, while the river is possibly the most valuable habitat in the area. Nevertheless, it is not easy to define if local people consider conservation priorities, and ecologically valuable places or they just mean what is not useful for them is useful for nature.

Places that scored highly for beauty and importance also appear to be the most important for conservation. This is somewhat worrying as it may be predicted that human pressure will be concentrated in these most vulnerable biotopes in the future. The situation is made worse as present management is minimal and perhaps can be described as being only a 'paper park'.

Nevertheless values are dynamic, not static and evolve and change with technological or fashion changes. As individuals place no value on resources of whose existence or usefulness they are entirely unaware (Crowards, 1997) it could be said that places highly evaluated at present had much lower value some years ago. It would be interesting to carry out a comparative study in areas with similar environment but without tourist development in order to test that.

Conservation values also evolve and change (Blunden, & Curry, 1990). Thus, values in general are obviously subject to influences and education. Nonetheless the question here is in which direction will that education be: from local people to managers or from managers to local community?

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7.3 Perceived change in the “cultural landscape”

7.3.1 Land use change

According to this study (see Figure 12) the greatest change in the area has been land abandonment due to socio-economic changes, which has caused recovery of the natural vegetation.

Such changes are a common pattern in the Mediterranean landscape, owing to its history of nature-human interactions. Especially in the north side of the Mediterranean basin (France, Spain, Portugal and Italy) extensification of disturbance regimes, due to agricultural abandonment and rural depopulation, dating back to the end of the nineteenth century but accelerating greatly since the Second World War is a major risk for the Mediterranean biodiversity and landscape (Naveh & Lieberman, 1984; Farina, 1991; Tucker & Evans, 1997; Farina, 1998; Blondel & Aronson, 1999). The effect of these changes is the transformation of the landscape from a patchy and diverse mosaic dominated by fields, into “homogenous degraded woodlands” affecting the composition and abundance of plant and animal communities (Farina, 1991; Farina, 1998).

Land abandonment produces changes in patterns of the land mosaic modifying the landscape matrix (Farina, 1991). Before the 1940s most of the study area was covered by a matrix of cultivations and open lands. Woodlands restricted to specific places were very significant to counteract soil and water erosion and protect settlements and cultivations from natural disasters. Today the situation is the opposite: the matrix is composed of woodlands among which patches of abandoned fields exist as of remnants (see aerial photographs 1 & 2).

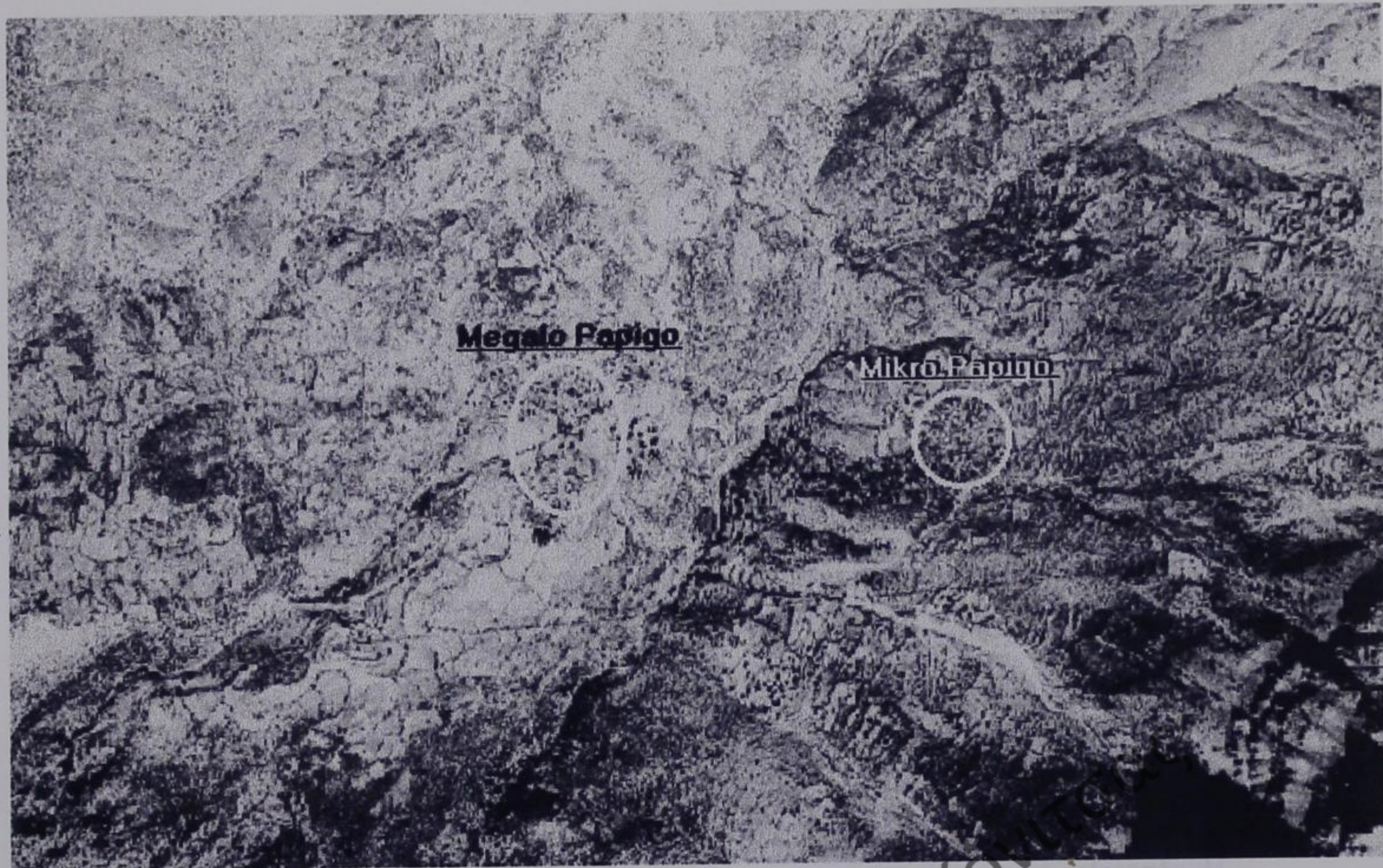
7.2.1 Land use change

According to the study (see Figure 15) the greatest change in the area has been land abandonment due to socio-economic changes, which has caused recovery of the natural vegetation.

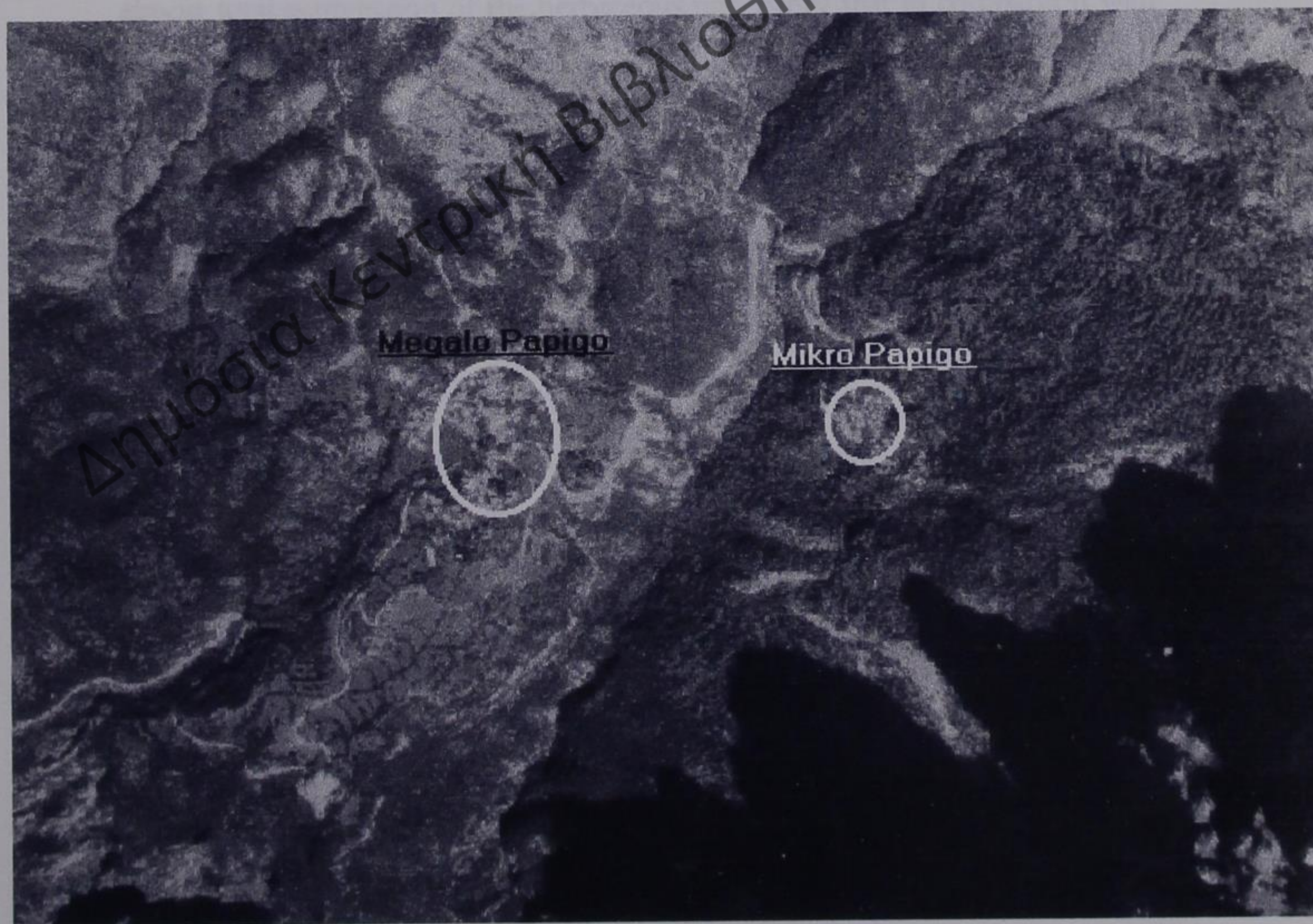
Such changes are a common pattern in the Mediterranean landscape, owing to the lack of man-landscape interaction. Especially in the north side of the Mediterranean basin (France, Spain, Portugal and Italy) abandonment of the landscape has led to agricultural abandonment and rural depopulation. Going back to the nineteenth century, the agricultural landscape was being transformed into a mosaic of fields and woods. The effect of these changes is the transformation of the landscape from a homogeneous mosaic dominated by fields and woods to a heterogeneous mosaic dominated by fields and woods and abandoned woodlands (Forman, 1998).

Land abandonment produces changes in patterns of the landscape. In the landscape matrix (Forman, 1995). Before the 1940s most of the study area was covered by a matrix of cultivation and open fields. Woodlands restricted to specific places were very significant in connection with soil and water erosion and protect settlements and cultivated areas from natural disasters. Today the landscape is the opposite: the matrix is composed of woodlands among which patches of abandoned fields exist as of remnants (see aerial photographs 1 & 2).

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Aerial photograph 1: The area surrounding Mikro and Megalo Papigo in 1945. (Original aerial photograph scale 1: 42,000).



Aerial photograph 2: The area surrounding Mikro and Megalo Papigo in 1995. (Original aerial photograph scale 1: 30,000).

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Such processes of natural regeneration that decrease habitat patchiness and reduce this typical 'moving mosaic' landscapes, so characteristic of the Mediterranean area, can cause major derangement in the species diversity of these frequently but moderately disturbed sites which support a higher biodiversity in Mediterranean (Farina, 1998; Blondel & Aronson, 1999).

Although the effect of land abandonment on biodiversity and ecological diversity in general is not well understood the most common issues are the structure of the landscape and the effects on plant and animal communities (Farina, 1998).

In abandoned pastureland especially, the vigorous regeneration of sclerophylls is followed by the gradual enclosure of the shrub canopy. This leads to the almost total suppression of the herbaceous understory that in comparison with disturbed, semiopen and multilayered shrub communities have less floral diversity and lower species richness and abundance of birds, rodents, reptiles and insects (Naveh & Lieberman, 1984). Such abandoned sclerophyll shrub ecosystems are neither diverse nor productive nor stable and can be perpetuated and rejuvenated only by fire or cutting and thinning (Naveh & Lieberman, 1984).

A summary of the consequences of land abandonment due to reduction of agricultural and farming practices mentioned above is given in Table 14.

Subsequent research suggests the degree of...
the typical...
development...
this...
1997

Although the effect of...
diversity is...
of the...
1997

In...
is followed by...
diversity and...
and...
components...
1997

A number of the...
1997

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Table 14: The consequences of a reduction of agricultural and farming practices to landscape mosaic (adapted from Farina, 1991).

Consequences of land abandonment to landscape	
1	Decrease of patchiness
2	Increase of woodland cover and connectivity
3	Increased risk of natural and man- induced fires
4	Effects on distribution and abundance of animal and bird populations

7.3.2 Changes in biodiversity

Habitat changes do not have the same effects on all groups of organisms. Forest recovery resulting from recent abandonment of traditional land use practices in most Euro-Mediterranean countries is beneficial for forest - dwelling species, but it results in habitat reduction for species preferring open habitats (Tucker & Evans, 1997; Blondel & Aronson, 1999).

In Mediterranean forest, shrubland and rocky habitats, abandonment of grazing, or undergrazing that consequently increases vegetation cover and height and reduces patchiness and vegetation diversity has been recognised by BirdLife International as the main threat to bird species of high conservation priority in Europe (Tucker & Evans, 1997).

Conversely, whereas most birds preferring open-spaces have been dramatically reduced by land abandonment, some large mammals are reclaiming areas that were previously unsuitable or hostile (Apollonio, 1996, in Farina, 1998). For example wild boars (*Sus scrofa*) have been favoured by land abandonment and are becoming common all over southern Europe (Farina, 1991; Farina, 1998).

Table 10: The importance of a reduction of activities and leisure practices in landscape design (adapted from Form, 1997).

Category	Importance
1. Reduction of activities	High
2. Increase of vegetation cover and connectivity	Medium
3. Increase of natural and semi-natural areas	Medium
4. Effect on biodiversity and abundance of natural and semi-natural areas	Low

Table 10 shows the importance of a reduction of activities and leisure practices in landscape design. The table is divided into four categories. The first category is 'Reduction of activities', which is considered to have a high importance. The second category is 'Increase of vegetation cover and connectivity', which is considered to have a medium importance. The third category is 'Increase of natural and semi-natural areas', which is also considered to have a medium importance. The fourth category is 'Effect on biodiversity and abundance of natural and semi-natural areas', which is considered to have a low importance.

Overall, the table indicates that the most important factor in landscape design is the reduction of activities. This is followed by the increase of vegetation cover and connectivity, and the increase of natural and semi-natural areas. The effect on biodiversity and abundance of natural and semi-natural areas is considered to be the least important factor.

The analysis of the photograph scoring showed that local people are aware of the recovery of vegetation as the main change in the area (see Figure 12). In addition the analysis of the questionnaires showed that people are also aware about changes in wildlife although they did not mention them when seeing the photographs (see Figure 23).

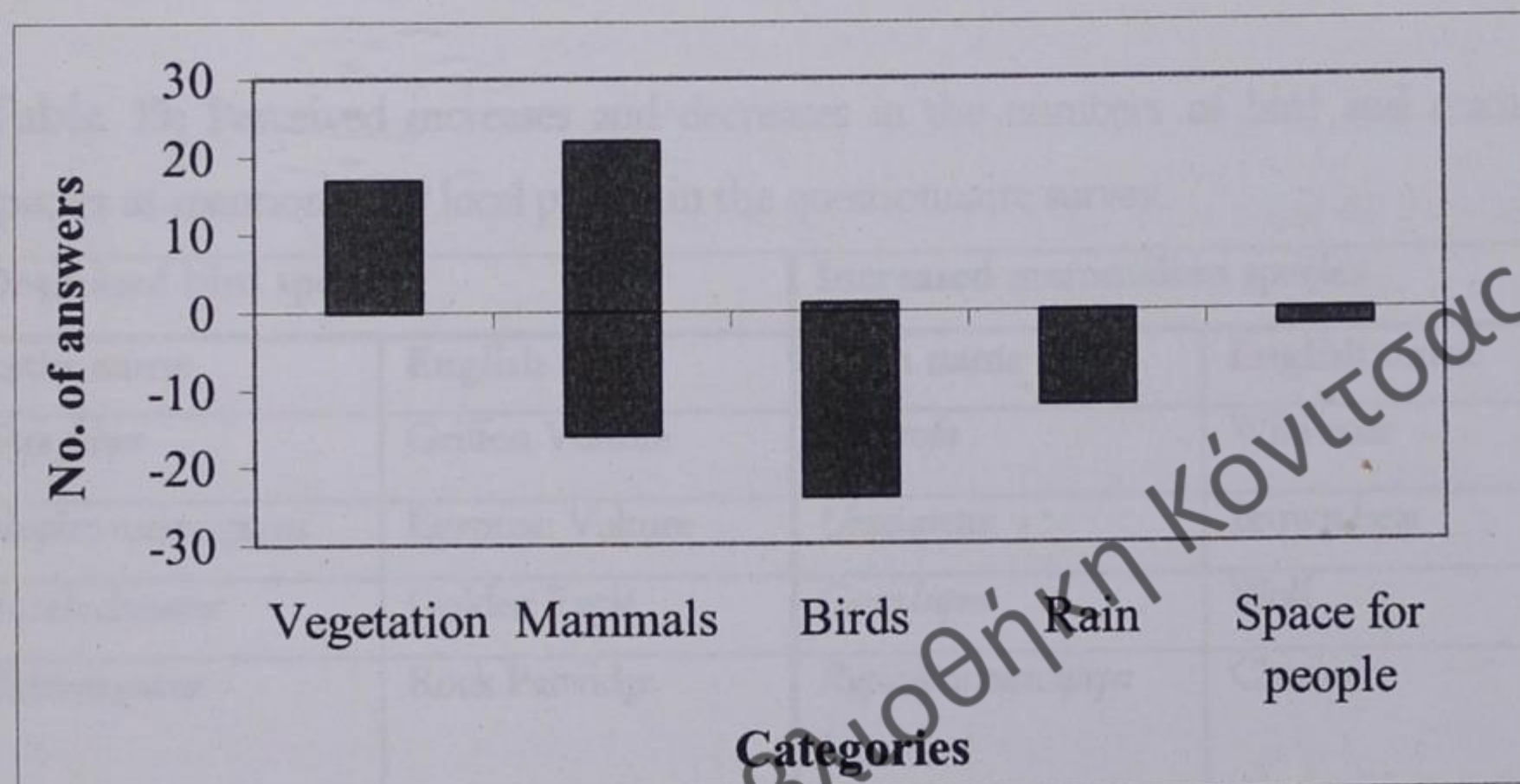


Figure 23: Increases and decreases in categories of the natural environment during the last few years, as mentioned by local people in questionnaire survey.

According to the results of the questionnaire (see Table 15), decreases in birds and mammals preferring open habitats (e.g. partridge, rock pigeon and hare) was linked to abandonment of agriculture, whilst increases in forest mammals (e.g. wild boar and brown bear) was explained due to vegetation recovery. Decreases in vultures, raptors and chamois were considered to be due to poaching (including the laying of poison baits for birds). For other bird species people could not explain the reasons for the decrease although some tried to give explanations which were often rather bizarre.

The analysis of the photographs scoring showed that local people are aware of the diversity of vegetation in the area (see Figure 15). In addition the analysis of the questionnaire showed that people are also aware about changes in wildlife although they did not remember what was scoring the photographs (see Figure 15).

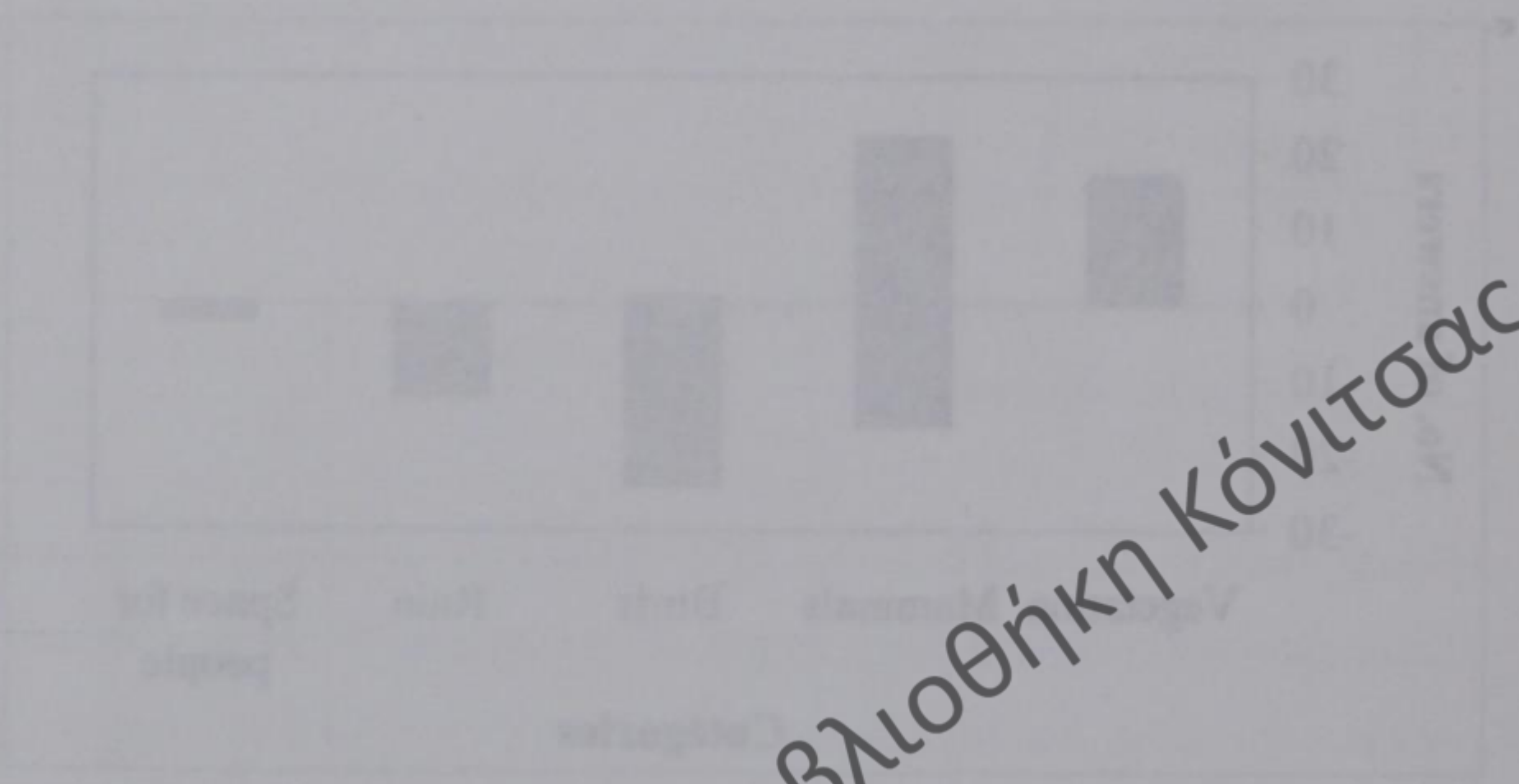


Figure 15. Increase and decrease in the number of birds and plants during the last year as mentioned by local people (questionnaire survey).

According to the results of the questionnaire (see Table 1) the increase in birds and mammals preferring open habitats (e.g. partridge, rook, quail and hen) was linked to abandonment of agriculture while increase in some species (e.g. wild boar and brown bear) was explained due to vegetation loss. Decreases in various raptors and chamois were considered to be due to poaching (including the spring of poison baits for birds). For other bird species people could not explain the reason for the decrease although some tried to give explanations which were often rather vague.

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Decreasing numbers of bird species mentioned by locals agree with those mentioned by scientists as declining or extinct from the area (Tsiakiris, 1999). This is not surprising as there is evidence (Tuxill & Nabhan, 1998; Berkes, 1999) that due to their life-long familiarity with organisms, localities and microenvironments, local people have a very detailed knowledge about their local environment.

Table 15: Perceived increases and decreases in the numbers of bird and mammal species as mentioned by local people in the questionnaire survey.

Decreased bird species		Increased mammalian species	
Latin name	English name	Latin name	English name
<i>Gyps fulvus</i>	Griffon Vulture	<i>Sus scrofa</i>	Wild boar
<i>Neophron percnopterus</i>	Egyptian Vulture	<i>Ursus arctos</i>	Brown bear
<i>Aquila chrysaetos</i>	Golden Eagle	<i>Canis lupus</i>	Wolf
<i>Alectoris graeca</i>	Rock Partridge	<i>Rupicapra rupicapra</i> <i>balcanica</i> ²	Chamois
<i>Columba livia</i>	Rock Pigeon	<i>Vulpes vulpes</i>	Red fox
<i>Merops apiaster</i>	Bee-eater		
<i>Hirundinidae</i>	Swallows and Martins		
<i>Pyrrhocorax spp</i> ³	Chough		
<i>Turdus philomelos</i>	Song Thrush		
<i>Passer domesticus</i>	House-sparrow		
Increased bird species		Decreased mammalian species	
<i>Alectoris graeca</i>	Rock Partridge	<i>Lepus capensis</i>	Hare
		<i>Rupicapra rupicapra</i> <i>balcanica</i>	Chamois

² Chamois and Rock Partridges were considered both as increased and decreased species by different people.

³ Both species Chough (*Pyrrhocorax pyrrhocorax*) and Alpine Chough (*Pyrrhocorax graculus*) occur in the area and all people know them because in the past large mixed flocks used to feed on fruit trees inside the village, but people did not differentiate between the two species.

Decreasing number of bird species mentioned by local people with those mentioned by scientists as declining or extinct from the area (Lalazar, 1997). This is not surprising as there is evidence (Lull & McPherson, 1998; Baker, 1997) that due to their lifelong familiarity with organisms, local and micro-environmental, local people have a very detailed knowledge about their local environment.

Table 1: Perceived increase and decrease in the number of bird and mammal species as mentioned by local people in the questionnaire survey.

Increased mammalian species		Increased bird species	
English name	Latin name	English name	Latin name
Wild boar	Sus scrofa	Golden Plover	Pluvialis aurora
European badger	Meles meles	Common Pheasant	Phasianus torquatus
Wolf	Canis lupus	Partridge	Spizella monticola
Chamois	Rupicapra rupicapra	Partridge	Spizella monticola
	Alcega		
Red fox	Vulpes vulpes	Jack Snipe	Limicola trichoptera
		Partridge	Spizella monticola
		Swallow-tailed Petrel	Pterodroma externa
		Chaffinch	Fringilla monticola
		Red Thrush	Sylvia monticola
		Partridge	Spizella monticola
Increased mammalian species	Increased mammalian species	Increased bird species	Increased bird species
Leopard	Panthera pardus	Jack Snipe	Limicola trichoptera
Chamois	Rupicapra rupicapra		

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1. Chamois and Jack Snipe were mentioned by local people and mentioned as extinct by scientists. 2. Both species (Chaffinch and Partridge) were mentioned by local people and mentioned as declining by scientists. 3. Both species (Red Thrush and Partridge) were mentioned by local people and mentioned as declining by scientists. 4. Both species (Wild boar and European badger) were mentioned by local people and mentioned as declining by scientists.

8. CRITIQUE OF THE METHODS

Photograph scoring proved very useful in order to obtain information about reasons for visits in different areas in a quantitative way and it triangulated successfully with interviews. Conversely, it did not work very well when it came to evaluating beauty and importance. People scored most of the biotopes generously evaluating them may be higher than they thought. In cases where they had to compare present and past importance the method worked very well. Also, asking people to give the reasons for their scores and distinguishing positive and negative meaning in their answers was very useful. Eliciting this sort of information is often more important than the actual scores themselves as it provides a useful insight into the nature of local preferences.

Paired comparisons worked better than photograph scoring in that the transition from the most to least important appeared clearly as people had to choose between two groups of biotopes each time. Paired comparisons were also less time consuming and if people were asked to give the reasons for their preferences (which was done experimentally in the last of the comparisons) they would give much clearer results.

Semi-structured interviews with the help of aerial photographs were very useful in order to obtain information about management practices, and areas where land-use practices take place. Without the help of them the interviews would be very difficult to interpret as people used to explain localities based on toponyms which without the help of the photographs would have been very difficult to locate.

Photograph scoring proved very useful in order to obtain information about reasons for visits in different areas in a questionnaire way and a translated successfully with interview. Contrary, it did not work very well when it came to evaluating beauty and importance. People scored more of the pictures generally evaluating them may be higher than they thought. In cases where they had to compare present and past importance the method worked very well. Asking people to give the reasons for their scores and descriptions provided negative meaning in their answers was very useful. Finding this sort of error is often more important than the actual scores themselves as it provides a clue into the nature of local preferences.

Paired comparisons work better than photograph scoring in that the transition from the most to least preferred clearly as people had to choose between two groups of pictures. Paired comparisons were also less time consuming and if people were asked to give the reasons for their preferences which was done experimentally in the paired comparisons they would give much clearer results.

Semi-structured interviews with the help of aerial photographs were useful in order to obtain information about management practices and areas where land-use practices take place. Without the help of them the interviews would be very difficult to interpret as people tend to explain features based on toponymy which, without the help of the photographs would have been very difficult to locate.

Semi-structured walks did not work so well as described in the literature but they were very useful and necessary in order to help the researcher to obtain a familiarity with the area and to understand how local people use and perceive their land. If the period of the study has been longer there would exist more opportunities to participate in and see first hand, traditional and modern management practices.

Short questionnaires were very effective because they were brief, easily to conduct and gave people the opportunity to express their opinions about the national park and their proposals for the future. These subjects were much easier to deal with than beauty and importance with which people were less familiar. This questionnaire gave a better idea about the changes in wildlife, in contrast to the photographs which being dominated by the visual dimension gave information mainly about changes in the landscape.

To summarize, implementations of these methods showed that values and priorities set by different groups of people can be isolated and measured. This study could serve as a pilot study for more detailed research relating to management patterns in the area. For example seasonal maps regarding land uses and intensity of use could be created and compared for different time periods. Also, different uses could be analyzed and grouped for each of the biotopes in order to investigate different the varying pressures between habitats.

The question about reasons for visits, although very abstract gave a very good picture about uses and changes. If this question was more detailed asking about intensity of visits, reasons for visits at different times of the year etc. it could give a much more detailed picture of human pressures in different biotopes and at different time periods. For example recreational activities although appearing

Semi-structured walks did not work so well as described in the literature but they were very useful and necessary in order to help the researchers obtain a familiarity with the area and to understand how local people use and perceive their land. In the period of the study has been longer than would expect more opportunities to participate in and see the land, traditional and modern management practices.

Short questionnaires were very effective because they were brief, easy to conduct and gave people the opportunity to express their opinions about the national park and their proposals for the future. These subjects were much concerned with their beauty and importance with which people were less familiar. The questionnaire gave a better idea about the changes in wildlife, in contrast to the photographs which being dominated by the visual dimension gave information about changes in the landscape.

To summarize, exploratory methods showed the values and priorities set by different groups of people to be isolated and measured. This study could serve as a pilot study for detailed research relating to management patterns in the area. For example, surveys regarding land use and intensity of use would be created and compared at different time periods. Also, different uses could be analyzed and grouped in terms of the biotopes in order to investigate different the varying pressures between

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to be the main reason for visits may have been occasional in the past and very intense today.

Such a detailed study could be done to show how a land use system might succeed in both utilizing sustainably the full potential of a difficult mountainous environment while also conserving the rich biological diversity. It might also inspire and guide park managers to respect and incorporate local people's experiences and assist them towards a more collaborative management approach and lead to more sustainable development.

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interestingly

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9. CONCLUSION

The first conclusion to be drawn from this study is that changes in society and values mirror changes and pressures on the landscape. In the study area, pressures are moving from the areas around the village where the landscape used to be the highly modified by long lasting management practices, to isolated spots used by tourists. Conversely the cultural landscape around the village is being transformed into a monotonous closed scrubland vulnerable to fire.

Knowledge of the land is disappearing along with traditional land-uses and practices. Moreover, land use and cultural changes are resulting in a growing gap in the traditional knowledge and practices between older and younger generations. This may increase as further land abandonment occurs resulting in the loss of knowledge that has been accumulated over thousands of years.

Few examples of traditional management systems are still in force and perhaps these cannot escape the pace of progress. However they can inspire new approaches to environmental stewardship and suggest more participatory and locally grounded alternatives.

CONCLUSION

The first conclusion to be drawn from this study is that changes in water and values impact changes and pressures on the landscape. In the study area pressures are moving from the river toward the village where the landscape is being highly modified by long term management practices, to include sports tourism. Conversely, the cultural landscape around the village is being treated as a non-productive land and is being abandoned to fallow.

Knowledge of the land is being lost along with traditional practices and practices. Moreover, land use and management changes are resulting in a growing gap in the traditional knowledge and practices between older and younger generations. This may increase as further land management occurs resulting in the loss of knowledge that has been accumulated over hundreds of years.

Few examples of traditional management systems are still in force and these cannot escape the pace of progress. However, they can inspire new approaches to environmental research and suggest more participatory and locally grounded alternatives.

Especially in the Mediterranean, which is one of the richest biodiversity 'hotspots' in the world, such knowledge is crucial for the preservation of a sensible human adapted biodiversity and genetic variability before it is irretrievably lost along with its habitats.

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Especially in the 4th century, which is one of the later history
'progress' in the world, such knowledge is crucial for the preservation of a
various human adapted biodiversity and genetic variability. It is
unfortunately lost along with its history.

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10. BIBLIOGRAPHY

1. Anderson, E. F. (1993). *Plants and people of the Golden Triangle: ethnobotany of the hill tribes of northern Thailand*. Dioscorides Press. Portland. Oregon.
2. Aoki, Y. (1999). Review Article: trends in the study of psychological evaluation of landscape. *Landscape Research Group Ltd*: 85-94.
3. Appleton, J. (1994). Running before we can walk, are we ready to map 'beauty'? *Landscape Research*: 19(3): 112-119.
4. Aschmann, H. (1973). Man's Impact on the Several Regions with Mediterranean Climates. In: Di Castri, F. & Mooney, H.A. (editors). *Mediterranean Type Ecosystems. Origin and structure*. Ecological Studies Analysis and Synthesis. Volume 7. Chapman and Hall Limited.
5. Balée, W. (1989). The culture of Amazonian Forests. *Advances in Economic Botany* 7: 1-21.
6. Balick, M. J. & Cox, P. A. (1996). *Plants, People, and Culture: The Science of Ethnobotany*. Scientific American Library.
7. Bennett, G. (1996). *Cultural landscapes: The conservation challenge in a changing Europe*. Institute for Environmental policy.
8. Berkes, F. (1999). *Sacred Ecology: Traditional Ecological Knowledge and Resource Management*. Taylor and Francis.
9. Blondel, J. & Aronson, J. (1999). *Biology and Wildlife of the Mediterranean Region*. Oxford University Press.
10. Blunden, J. & Curry, N. (1990). *A People's Charter? Forty years of the National Parks and Access to the Countryside Act 1949*. Countryside Commission. London. Her Majesty's Stationery Office.

10. BIBLIOGRAPHY

1. Anderson, E. F. (1973). Plans and people of the Golden Triangle: a study of the hill tribes of northern Thailand. *Diogenes* 20: 1-10.

2. Aoki, Y. (1997). Review Article: trends in the study of psychological evaluation of landscape. *Landscape Research* 22: 85-94.

3. Appleton, J. (1994). Running before we can walk: are we ready to map? *Landscape Research* 19(3): 113-119.

4. Appleton, J. (1973). Man's impact on the Severn Region with reference to the Severn-Ogish and Severn Biological Reserves. *Journal of Applied Ecology* 10: 1-11.

5. Baker, W. (1978). The Forest of Arden: a study of the Severn-Ogish and Severn Biological Reserves. *Journal of Applied Ecology* 15: 1-11.

6. Balch, M. J. & Cox, P. A. (1980). *Forest and Open: The Severn-Ogish and Severn Biological Reserves*. *Journal of Applied Ecology* 17: 1-11.

7. Bennett, G. (1996). *Global Land-use: The environment as a changing landscape for environmental policy*. *Journal of Applied Ecology* 33: 1-11.

8. Borchers, R. (1997). *Forest Ecology: Traditional Ecological Knowledge and Resource Management*. *Journal of Applied Ecology* 34: 1-11.

9. Blomfield, J. & Anderson, J. (1997). *Forest and Wildlife of the Severn-Ogish and Severn Biological Reserves*. *Journal of Applied Ecology* 34: 1-11.

10. Blomfield, J. & Cox, P. A. (1990). *A Report on the Forest and Open: The Severn-Ogish and Severn Biological Reserves*. *Journal of Applied Ecology* 27: 1-11.

Δημόσια Κεντρική Βιβλιοθήκη Κόνιτσας

11. Boerboom, J. H. A. & Wiersum, K. F. (1983). Human impact on tropical moist forest. In: Holzner, W., Werger, M. J. A. & Ikusima (eds). *Man's impact on vegetation*. Dr W. Junk Publishers.
12. Campbell, J. K. (1964). *Honour, Family and Patronage. A study of Institutions and Moral Values in a Greek Mountain Community*. Clarendon Press. Oxford.
13. Carter, J. (1996). Recent Approaches to Participatory Forest Resource Assessment. Rural Development Forestry Study Guide 2. Rural Development Forestry Network. Overseas Development Institute. London. Russell Press Ltd, Nottingham.
14. Catsadorakis, G. (1999). *The Natural Heritage of Greece*. WWF-Hellas. Athens (in Greek).
15. Chandlidou, E. (1999). Flora and vegetation of Pindos-Zagori region. In: Mertzanis, G. (editor) *Special Environmental Study of the Pindos - Zagori region*. Life96NAT/GR/3222. Volume 1. Arktos Project: "Conservation of the brown bear (*Ursus arctos*) and its biotopes in Greece". (In Greek).
16. Chandran, M.D.S. & Hughes, J. D. (2000). Sacred Groves and Conservation: The comparative History of Traditional Reserves in the Mediterranean Area and in South India. *Environmental and History* 6: 169-186.
17. Colchester, M. (1997). Salvaging nature: Indigenous peoples and protected areas. In: Ghimire, K. B. & Pimbert, M.P. (editors). *Social Change and Conservation. Environmental Politics and Impacts of National Parks and Protected Areas*. Earthscan Publications Limited.
18. Cotton, C. M. (1996). *Ethnobotany: principles and applications*. John Wiley and Sons Ltd.
19. Covas, R. & Blondel, J. (1997). *Biogeography and history of the Mediterranean bird fauna*. *Ibis* 140: 395-407.

Δημόσια Κεντρική Βιβλιοθήκη Κόνιτσας

11. Borchers, J. M. A. & Wilson, K. R. (1983). *Human impact on tropical rain forest*. In Holmer, W., Wiegner, M. J. A. & Borchers (eds). *Man's impact on tropical rain forest*. W. Junk Publishers.

12. Campbell, J. K. (1984). *Human impact and the rain forest: a study of human impact on the rain forest in a Guianan rain forest*. Clarendon Press, Oxford.

13. Carr, J. (1990). *Recent Approaches to Participatory Forest Resource Assessment and Development*. Forest Study Guide 2. Royal Development Forest Network Overseas Development Institute, London. Royal Forest Ltd, Nottingham.

14. Carbonell, G. (1988). *The Forests of Guianan WFT-Hellas*. (in Greek).

15. Chazdon, R. (1999). *From and beyond of forest-landscape system to landscape ecology: a conceptual framework for the study of the forest-landscape system*. *Journal of Applied Ecology*, 36, 1-12.

16. Chazdon, R. (2007). *Forest Growth and Regeneration: The comparative ecology of tropical rain forest in the Neotropics*. *Journal of Ecology*, 95, 1-15.

17. Chazdon, R. (2007). *Shaping nature: landscape ecology and the forest-landscape system*. In Chazdon, R. & Borchers, M. J. A. (eds). *Human impact on tropical rain forest: a study of human impact on the rain forest in a Guianan rain forest*. Clarendon Press, Oxford.

18. Carr, J. (1990). *Recent Approaches to Participatory Forest Resource Assessment and Development*. Forest Study Guide 2. Royal Development Forest Network Overseas Development Institute, London.

19. Carr, J. & Borchers, J. (1997). *Participatory forest resource assessment: the case of the rain forest*. *Journal of Applied Ecology*, 34, 1-12.

20. Crötzbach, E. & Shadel, C. (1997). Mountain peoples and cultures. In: Messerli, B. & Ives, J.D. (editors). *Mountains of the World. A Global Priority*. The Parthenon Publishing Group Ltd.
21. Crowards, T. (1997). Non-use Values and the Environment: Economic and Ethical Motivations. *Environmental values* 6: 143- 167.
22. Dudley, N., Gujja, B., Jackson, B., Jeanrenaud, J.P., Oviero, G., Phillips, A., Rosabel, P., Stolton, S. & Wells, S. (1999). Challenges For Protected Areas In The 21st Century. In: Stolton, S. & Dudley, N. (editors). *Partnerships for Protection. New strategies for Planning and Management for Protected Areas*. WWF - International and International Union for Conservation of Nature and Natural Resources. Earthscan Publications Ltd.
23. Farina, A (1991). Bird communities facing land abandonment in a mountainous Mediterranean landscape. In: Thanos, K.A. (editor). *Plant-Animal Interactions in Mediterranean-type Ecosystems*. Proceedings of the 6th International Conference on Mediterranean Climate Ecosystems held at Maleme, Crete (Greece).
24. Farina, A. (1998). *Principles and methods in landscape ecology*. Chapman & Hall.
25. Fontana, A. & Frey, J.H. (1998). Interviewing: the Art of Science. In: Denzin, N.K. & Lincoln, Y.S. (editors). *Collecting and Interpreting Qualitative Materials*. Sage Publications.
26. Hewitt, K. (1997). Risk and disasters in mountain lands. In: Messerli, B. & Ives, J.D. (editors). *Mountains of the World. A Global Priority*. The Parthenon Publishing Group Ltd.
27. Ingrouille, M. (1995). *Historical Ecology of the British Flora*. Chapman & Hall. London.

Δημόσια Κεντρική Βιβλιοθήκη Κόνιτσας

28. Jackson, W.J. & Ingles, A.W. (1998). Issues in Forest Conservation. *Participatory Techniques for Community Forestry. A field Manual*. Australian Agency for International Development (AusAID), IUCN, WWF.
29. Kaplan, R. (1985). The analysis of perception via preference: a strategy for studying how the environment is experienced. *Landscape Planning*: 12: 161-176.
30. Kellert, S. R. (1996). *The Value of Life. Biological diversity and human society*. Island Press/ Shearwater Books.
31. Kyriacidou – Nestoros, A. (1989). *Folklore studies*. Volume I. Society of Greek Literary and Historical Registry. Athens. (In Greek).
32. Labridis, I. (1889). Studies on the region of Ipiros – Zagori. Part I. Athens.
33. Lucas, P.H.C. (1992). *Protected Landscapes. A guide for policy makers and planners*. Protected Areas Program. IUCN - the World Conservation Union/ The Countryside Commission and the East-West Center. Chapman And Hall.
34. Mabberley, D. J. (1992). *Tropical Rain Forest Ecology*. 2nd edition. Blackie USA: Chapman & Hall, N. York.
35. Manning, R., Valliere, W., Minter, B. (1999). Values, Ethics, and Attitudes Toward National Forest Management: An Empirical Study. *Society and Natural Resources* 12 (5): 421-436).
36. Martin, G.J. (1994). Conservation and ethnobotanical exploration. In: *Ethnobotany and the search for new drugs*. Symposium 185, pp. 228-245. Chichester, UK John Wiley and Sons.
37. Martin, G.J. (1995). *Ethnobotany: A methods manual*. "People and Plants" Conservation Manuals. Chapman & Hall.
38. Nanouri, E. & Tsiokanos, K. (1999). Demographic analysis of Pindos-Zagori region. In: Mertzanis, G. (editor) *Special Environmental Study of the Pindos – Zagori region*. Life96NAT/GR/3222. Volume 1. Arktos Project:

Δημόσια Κεντρική Βιβλιοθήκη Κόνιτσας

28 Jackson, W.J. & Jagers, A.W. (1992). Issues in Forest Conservation. *International Journal of Environment & Development*, 1(1), 1-12.

29 Agency for International Development (AID). (1992). *World Development Report 1992: The state of the world 1992*. Washington, DC: World Bank.

30 Keller, S.R. (1990). *The Value of the Biological Diversity and Forest Ecosystems*. *Biological Conservation*, 51(1-2), 1-12.

31 Kytzia - Nantou, A. (1989). *Forest and the Environment*. Volume 1. *Forest Ecology and Management*, 31(1-2), 1-12.

32 Linder, I. (1989). *Studies on the region of the Zagori - Part I*. *Journal of Geography*, 94(1), 1-12.

33 Lucas, R. (1992). *Forest Ecology and the World Conservation Union*. *The World Conservation Union and the East-West Center*. Chapter 10, 1-12.

34 Mahoney, D.J. (1992). *Forest Ecology*. 2nd edition. Blackie Academic & Professional, London.

35 Manning, R., Vallier, W., Nantou, A., Vassilakis, E., and Vassilakis, E. (1992). *Forest Ecology and Management*. Volume 1. *Forest Ecology and Management*, 31(1-2), 1-12.

36 Martin, G.J. (1992). *Conservation and environmental education*. In: *Environmental Education for the 21st Century*, pp. 123-145. *Environmental Education Research*, 12(2), 123-145.

37 Martin, G.J. (1992). *Environmental Education: People and Places*. *Environmental Education Research*, 12(2), 123-145.

38 Nantou, A. & Tsioukas, K. (1992). *Demographic analysis of the Zagori region*. In: *Forest Ecology and Management*, Volume 1. *Forest Ecology and Management*, 31(1-2), 1-12.

- “Conservation of the brown bear (*Ursus arctos*) and its biotopes in Greece”. (In Greek).
39. Nassauer, J.I. (1995). Culture and changing landscape structure. *Landscape Ecology* 10 (4): 229-237.
40. Naveh, Z. & Dan, J. (1973). The Human Degradation of Mediterranean Landscapes in Israel. In: Di Castri, F. & Mooney, H.A. (editors). *Mediterranean Type Ecosystems. Origin and structure*. Ecological Studies Analysis and Synthesis. Volume 7. Chapman and Hall Limited.
41. Naveh, Z., & Lieberman, A.S. (1984). *Landscape Ecology. Theory and application*. Springer-Verlag.
42. Nichols, P. (1991). *Social survey methods. A field guide for development guidelines*. Development guidelines, V 6. Oxfam.
43. Nitsiakos, B. (1998). *Department of Ioannina. Contemporary Cultural Geography*. Prefectural Government of Ioannina (In Greek).
44. Papaioannou, I.G. (1986). *Papigo: One of the most beautiful villages in Zagori*. Second edition. Volume 1. (In Greek).
45. Papaioannou, X. (1999). Amphibians and reptiles of Pindos-Zagori region. In: Mertzanis, G. (editor) *Special Environmental Study of the Pindos – Zagori region*. Life96NAT/GR/3222. Volume 1. Arktos Project: “Conservation of the brown bear (*Ursus arctos*) and its biotopes in Greece”. (In Greek).
46. Phillips, A. (1999). Working Landscapes as Protected Areas. In: Stolton, S. & Dudley, N. (editors). *Partnerships for Protection. New strategies for Planning and Management for Protected Areas*. WWF – International and International Union for Conservation of Nature and Natural Resources. Earthscan Publications Ltd.
47. Plotkin, M. J. (1995). The importance of Ethnobotany for tropical Forest Conservation. In: Schultes, R. E. & Von Reis S. *Ethnobotany: evolution of a discipline*. Chapman & Hall. London.

Δημόσια Κεντρική Βιβλιοθήκη Κόνιτσας

48. Posey, D.A. (1993). The importance of semi-domesticated species in post-contact Amazonia: effects of the Kayapó Indians on the dispersal of Flora and Fauna. In: Hladik, C.M., Hladik, A., Linares, O. F., Pagezy, H., Semple, A., Hadley, M. (editors). *Tropical forests, people and food*. Man and the Biosphere Series. UNESCO.
49. Prance, G.T., Balée, W., Boom, B.M. & Carneiro, R.L. (1995). Quantitative Ethnobotany and the Case for Conservation in Amazonia. In: Schultes, R. E. & Von Reis S. *Ethnobotany: evolution of a discipline*. Chapman & Hall. London.
50. Rocheleau, D. (1995). Gendered Resource Mapping in Pananao, La Sierra, Dominican Republic. In: Slocum, R.; Wichhart, L.; Rocheleau, D. and Thomas-Slayter, B. (editors). *Power, Process and Participation - Tools for Change*. Intermediate Technology Publications.
51. Sayer, J.A. (1999). Globalization, Localization and Protected Areas. In: Stolton, S. & Dudley, N. (editors). *Partnerships for Protection. New strategies for Planning and Management for Protected Areas*. WWF - International and international Union for Conservation of nature and natural Resources. Earthscan Publications Ltd.
52. Schmid & Reichenecker, 1998). The breeding-birds of the Vikos/Voidomatis valley and Mt. Astraka/Gamila in the Pindus mountains, province Ioannina, Central Greece. *Kartierung Mediterraner Brutvögel* 1: 17-24.
53. Sharma. S., Rikhari, H.C. & Palni, L.M.S. (1999). Conservation of Natural Resources Through Religion: A Case Study from Central Himalaya. *Society & Natural Resources* 12 (6): 599-612.
54. Slocum, R. & Thomas-Slayter, B. (1995). Participation, empowerment, and sustainable development. In: Slocum, R., Wichhart, L., Rocheleau, D. & Thomas-Slayter, B. (editors). *Power, Process and Participation - Tools for Change*. Intermediate Technology Publications.

Δημόσια Κεντρική Βιβλιοθήκη Κόνιτσας

55. Sochaczewski, P. (1999). Life Reserves: Opportunities to use spiritual values and partnerships in forest conservation. In: Stolton, S. & Dudley, N. (editors). *Partnerships for Protection. New strategies for Planning and Management for Protected Areas*. WWF - International and International Union for Conservation of Nature and Natural Resources. Earthscan Publications Ltd.
56. Stamatopoulou, Ch. (1998). *Greek Traditional Architecture: Zagori*. Melissa Publishing House. Athens, Greece.
57. Stolton, S. & Dudley, N. (1999). *Partnerships for Protection. New strategies for Planning and Management for Protected Areas*. WWF - International and international Union for Conservation of nature and natural Resources. Earthscan Publications Ltd.
58. Tsiakiris, R. (1999). The avifauna of Zagori. In: Mertzanis, G. (editor) *Special Environmental Study of the Pindos - Zagori region*. Life96NAT/GR/3222. Volume 1. Arktos Project: "Conservation of the Brown Bear (*Ursus arctos*) and its biotopes in Greece". (In Greek).
59. Tucker, G. M. & Evans, M.I. (1997). *Habitats for birds in Europe: a conservation strategy for the wider environment*. Cambridge, U.K.: BirdLife International (BirdLife Conservation series no. 6).
60. Tuxill, J. & Nabhan, G. P. (1998). *Plants and Protected Areas. A guide to in situ management*. "People and Plants" conservation manuals. Stanley Thornes (Publishers) Ltd.
61. Warburton, H. & Martin, A. (1999). Local people's knowledge: its contribution to natural resource research and development. In: Grant, I.F. & Sear, C. (editors). *Decision Tools for Sustainable Development*. Chatman, UK: Natural Resources Institute.
62. Warnock, S. & Brown, N. 1998. Putting landscape first. *Landscape design*: 44-46.

Δημόσια Κεντρική Βιβλιοθήκη Κόνιτσας

63. Willis, K. J. (1992a). The late Quaternary vegetational history of northwest Greece. II. Rezina marsh. *New Phytologist*. 121: 119-138.
64. Willis, K. J. (1992b). The late Quaternary vegetational history of northwest Greece. III. A comparative study of two contrasting sites. *New Phytologist*. 121: 139-155.
65. Zar, J.H. (1974). *Biostatistical analysis*. Prentice-Hall, INC.
66. Zar, J.H. (1996). *Biostatistical analysis*. Third edition. Prentice Hall International Editions.

Δημόσια Κεντρική Βιβλιοθήκη Κόνιτσας

of Willa K. J. (1935). The late Quaternary vegetation history of
southern Greece II. *Botanische Jahrbücher*, 55: 119-138.
of Willa K. J. (1935). The late Quaternary vegetation history of
southern Greece III. A comparative study of the southern and
Botanische Jahrbücher, 55: 139-155.
of Zucchi (1974). *Botanische Jahrbücher*, 94: 1-10.
of Zucchi (1990). *Botanische Jahrbücher*, 110: 1-10.
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11. APPENDICES

Δημόσια Κεντρική Βιβλιοθήκη Κόνιτσας

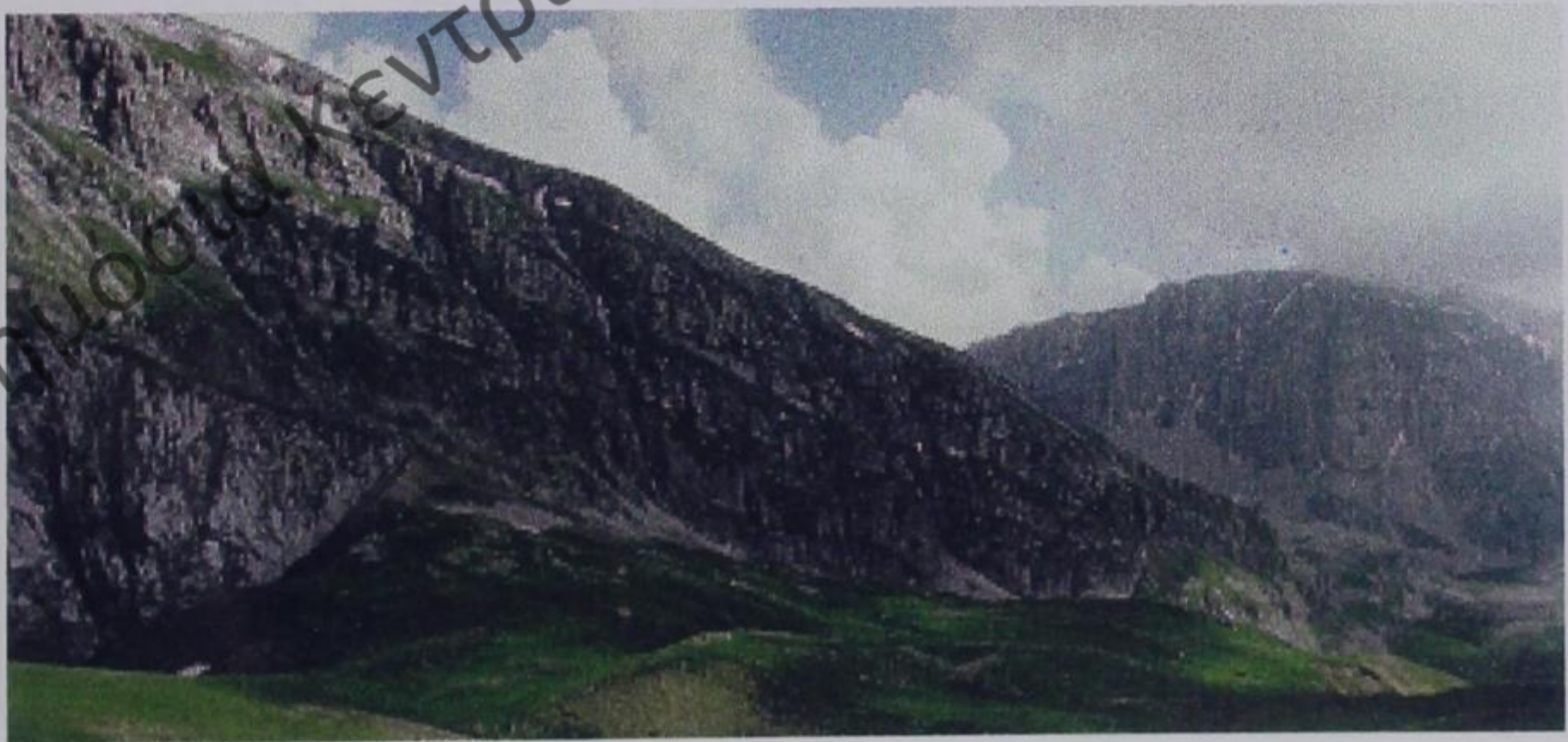
Δημόσια Κεντρική Βιβλιοθήκη Κόνιτσας

Appendix 1: Photographs used in the photograph scoring. Their presentation follows the groups used in paired comparisons.

Alpine zone



Photograph 6: Alpine lake. Legends tell of two dragons who lived in lakes on the mountains of Gamila and Smolikas. The lakes are named after the quarrelsome duo, Drakolimni (Dragon Lake) of Gamila and Drakolimni of Smolikas. They are said to have hurled rocks and trees at each other across the Aaos Ravine and their descendants are supposedly the rare alpine newts (*Triturus alpestris*) that live in these lakes.



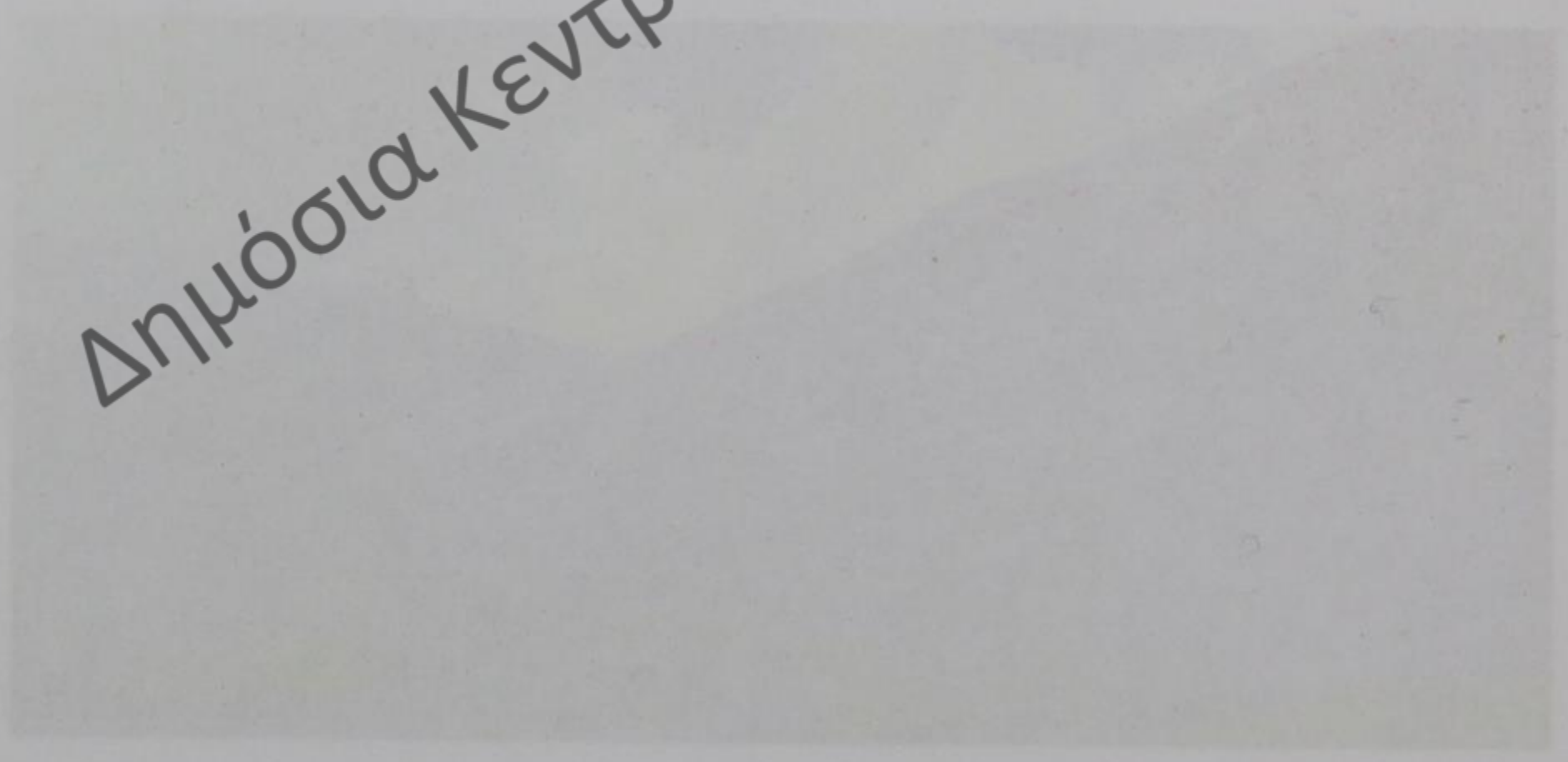
Photograph 7: Alpine calcareous grasslands. This landscape is strongly influenced by human intervention and has been heavily grazed since Bronze Age. In this area is sited Rezina marsh, the palaeobotanical study of which gave valuable information about vegetational and sedimentary history of the area.

Appendix 1 Photographs used in the photographic survey. These photographs follow the survey used as field comparisons.

Alpine zone



Photographs of the alpine zone of our domain were taken in June in the mountains of Central Europe. The lakes are mostly after the precipitation day. The alpine zone is mostly rocky and the vegetation is sparse. They are not as high as the mountains and the vegetation is not as dense as the mountains. The alpine zone is mostly rocky and the vegetation is sparse. They are not as high as the mountains and the vegetation is not as dense as the mountains.

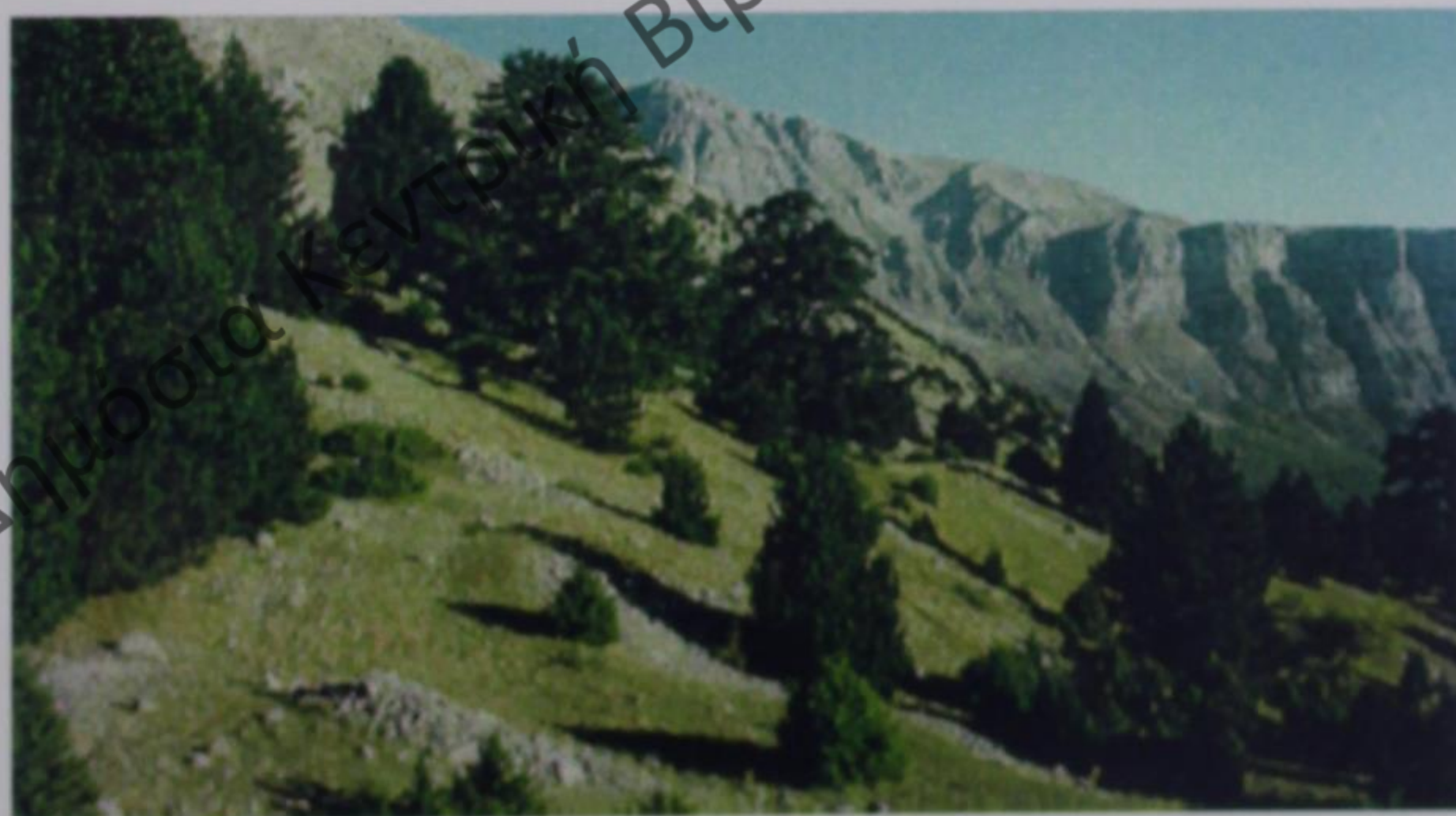


Photograph of the alpine zone. The landscape is mostly rocky and the vegetation is sparse. They are not as high as the mountains and the vegetation is not as dense as the mountains. The alpine zone is mostly rocky and the vegetation is sparse. They are not as high as the mountains and the vegetation is not as dense as the mountains.

Forests



Photograph 8: Hellenic Beech forests with *Abies borisii-regis*. In this region however, there is very little beech, due to poor soil. Even this remote area used to be agricultural land until the beginning of the 20th century.



Photograph 9: Stinking juniper (*Juniperus foetidissima*) woods. This forest was used as pastoral woodland during summer and as source of foliage fodder during winter. Part of it was sacred in the past to prevent sliding and destruction of the village of Mikro Papigo.

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Photograph 10: Mediterranean Pine forests, with endemic Mesogean Pines including *Pinus leucodermis* and *Pinus nigra*. Locals in the past used to take out of the trunk of these pine trees as a fire brand and use it as lighting.

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Area close to the village



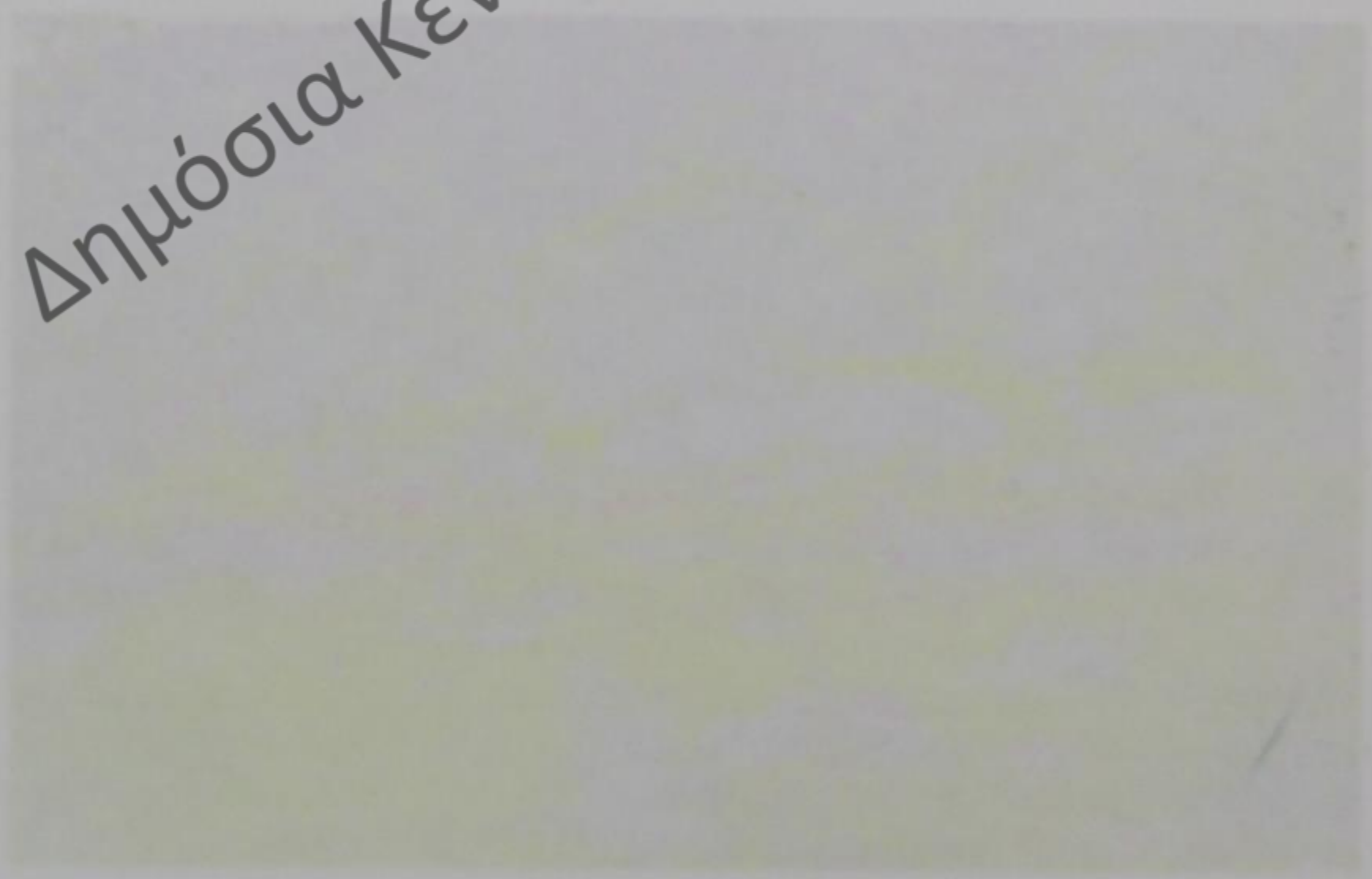
Photograph 11: *Quercus frainetto* woods. This area used to be dedicated to cereal cultivation in the past. On the edges of the terraced fields a man-modified, semi-natural woody and herbaceous plant community served to provide field fodder.



Photograph 12: Old cereal fields. Wheat, Barley and Rye were the main crops cultivated in the area. In times when the population pressure was higher cereal cultivation extended to the alpine meadows. Cereal cultivation in fields nearer to the village lasted generally until 1950.



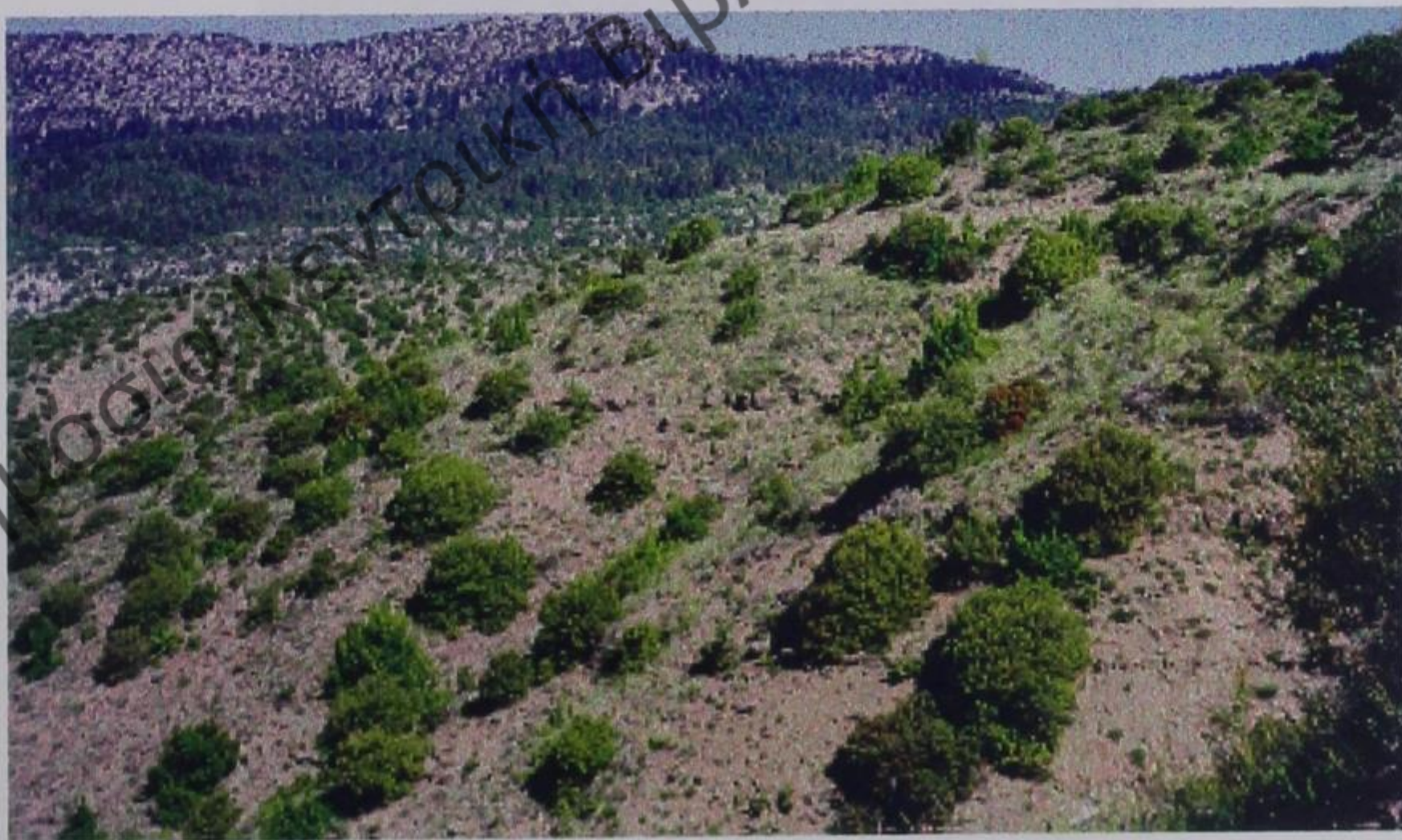
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Photograph 13: Pine trees plantation. This area claimed to be a juniper forest, which was cut for the construction of the central church of Megalo Papigo. As this forest was just above the village reasons of security against erosion enforced its plantation with Pine (mainly *Pinus nigra*) in 1959 according to the fashion of the time.

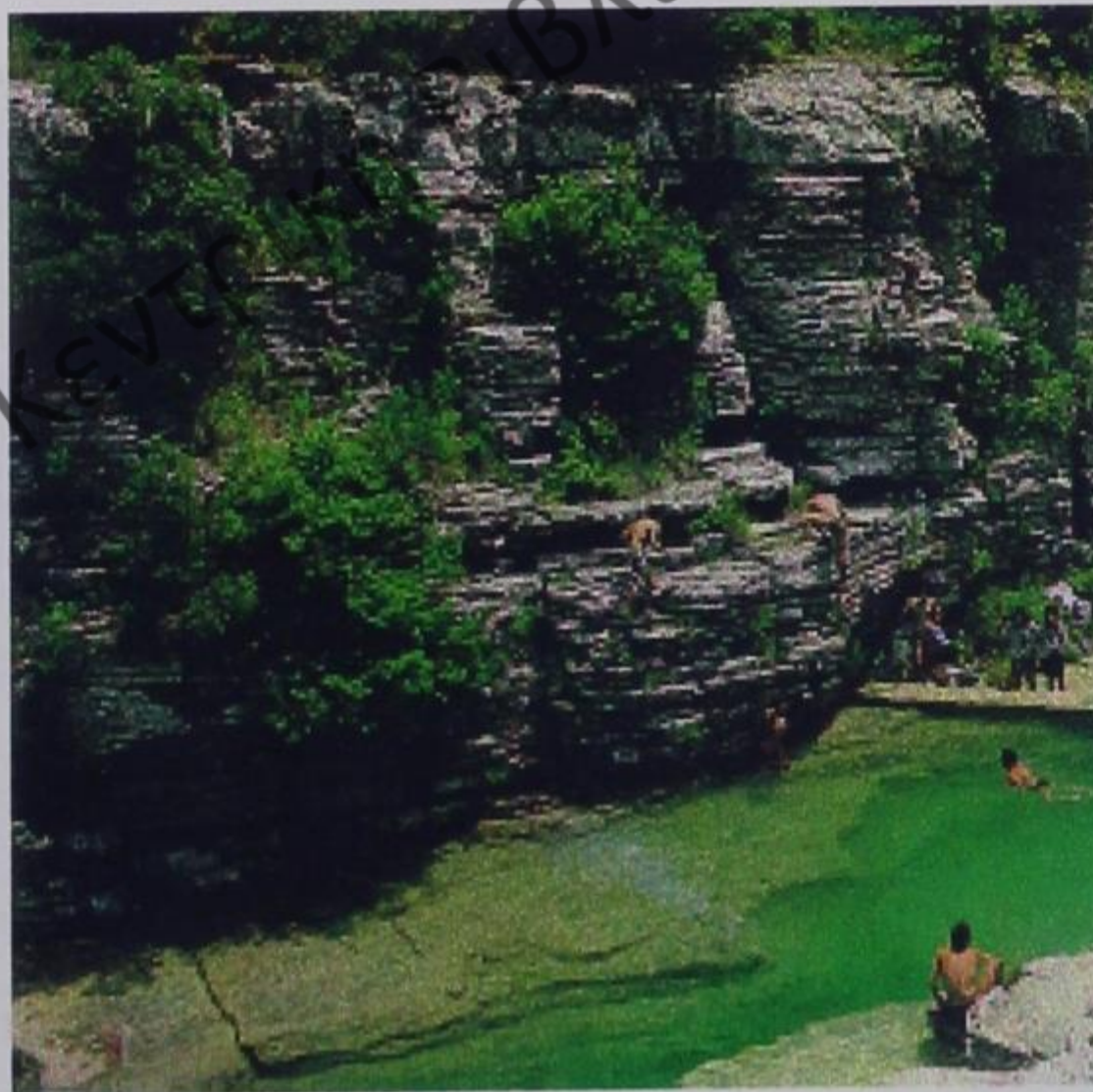


Photograph 14: Pastureland with *Juniperus communis* and *Juniperus oxycedrus* formations overlying a flysch geological substratum. Grazing –even at present in much smaller numbers- has maintained this landscape which is regarded as the most unchanged in the area close to the village.

Δημόσια Κεντρική Βιβλιοθήκη Κόνιτσας

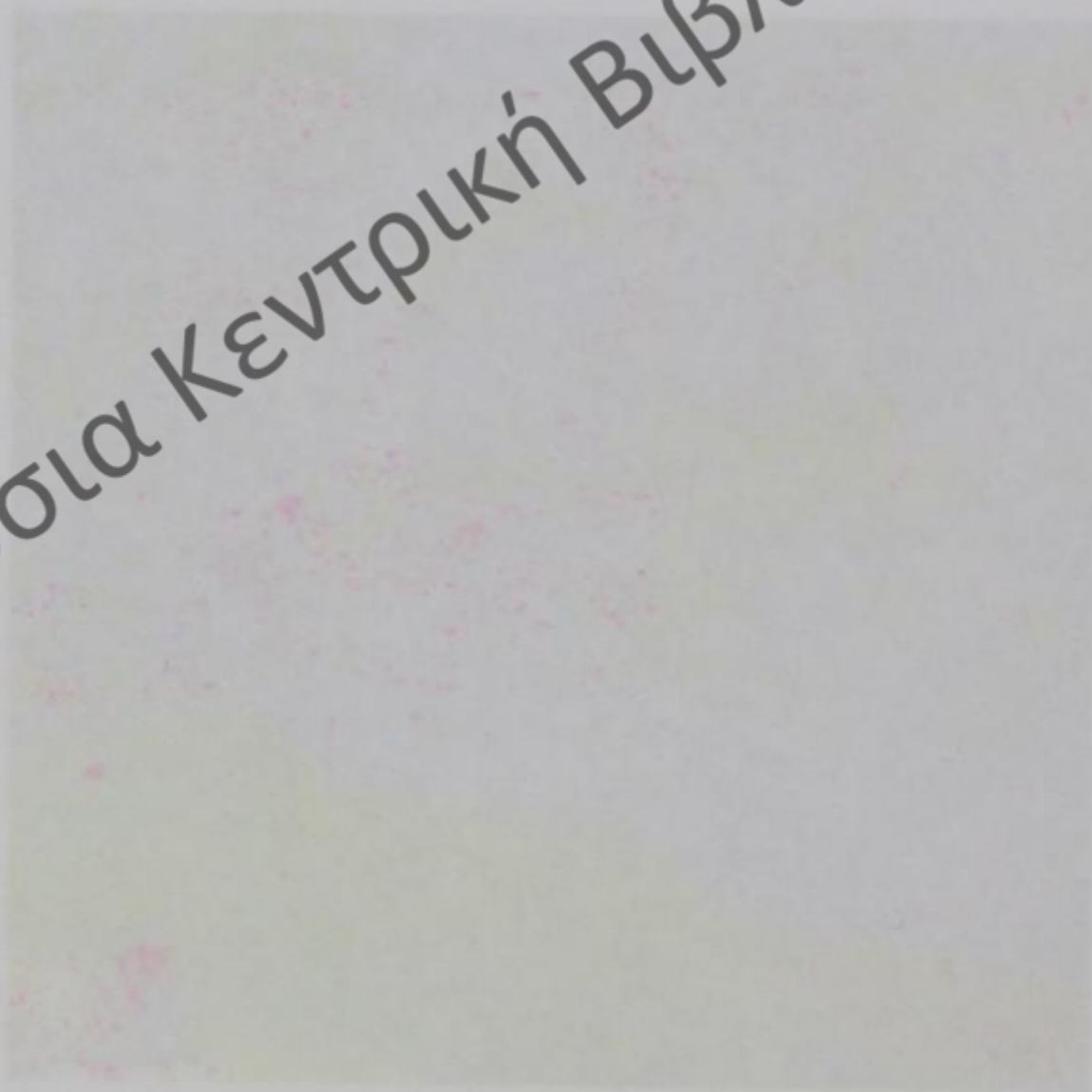


Photograph 15: Vegetable gardens and orchards. These irrigated cultivations were the most valuable areas in the recent past. Today they are characterized by locals as “jungle” since abandonment and recovery of vegetation has made them impassable.



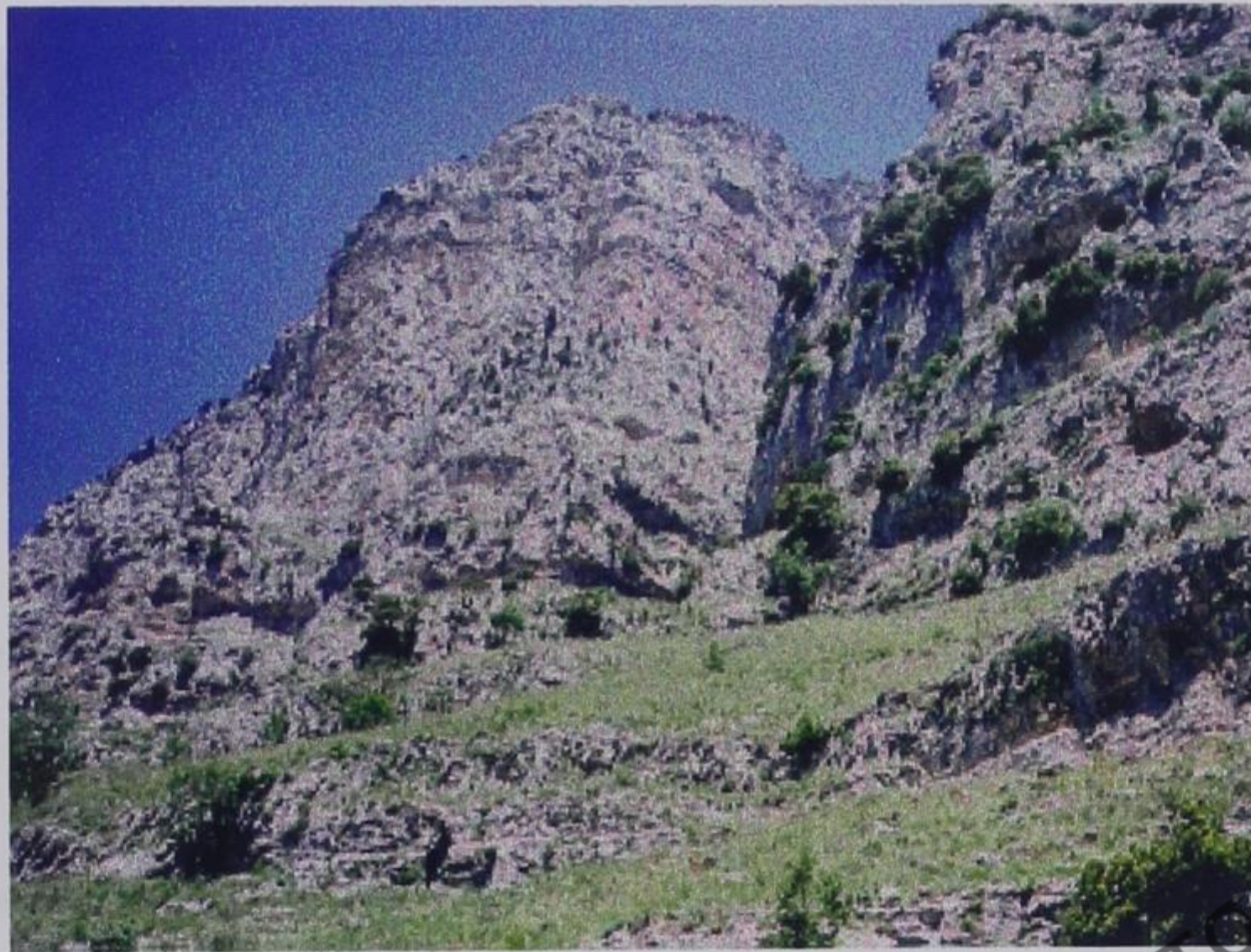
Photograph 16: Fresh water pool. This area, in between the two villages, constitutes a tourist attraction today. In the past women used the area for washing laundry and young men learned to swim there.

Δημόσια Κεντρική Βιβλιοθήκη Κόνιτσας



Photograph is faint and illegible. The text is centered on the page.

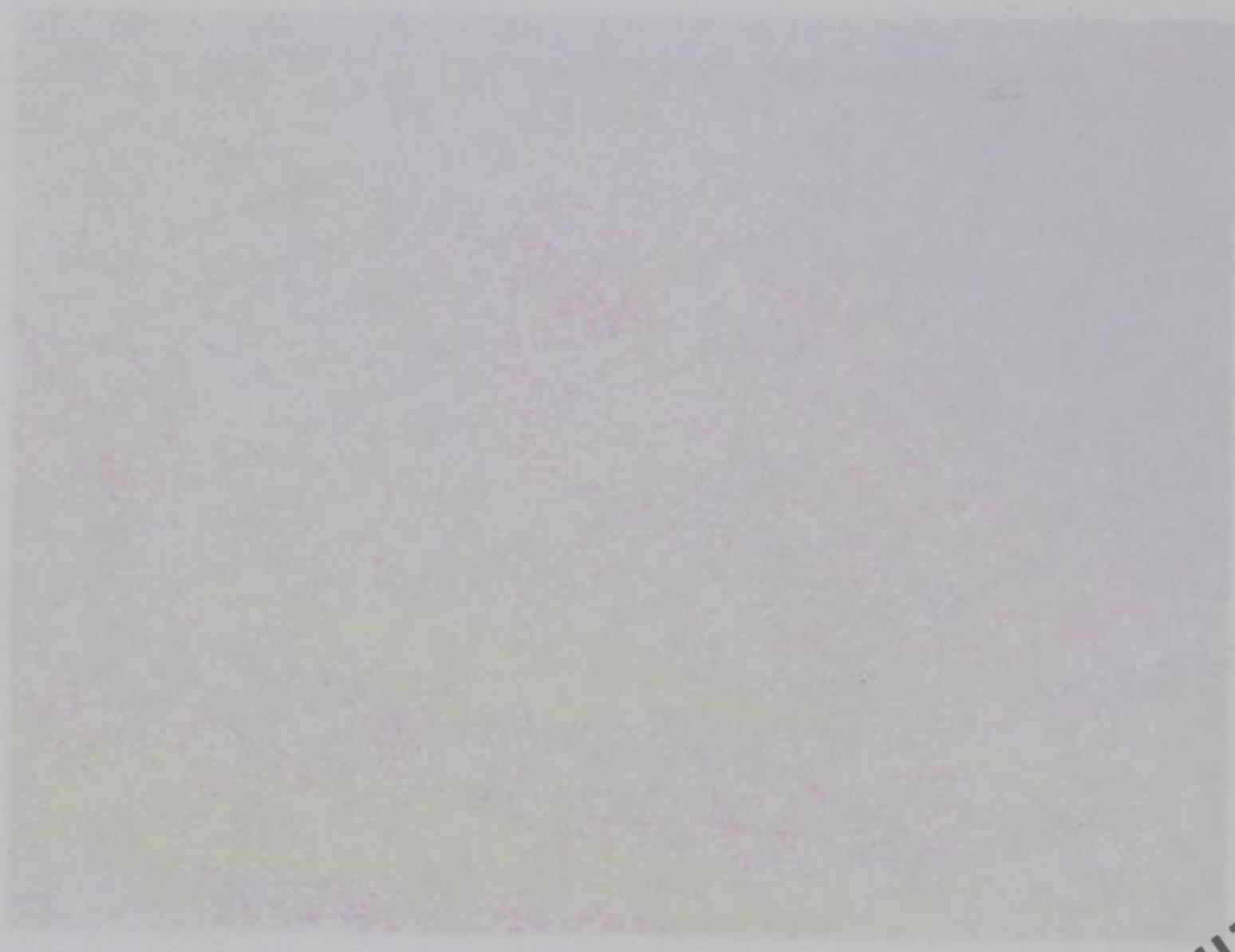
Rocky areas



Photograph 17: Rocks with slopes, Balkan screes and associated narrow meadows. Locals call them the towers of Papigo and describe them as the mountains that dance. Meadows adjacent are still used today as pastureland. Balkan screes are very interesting from a botanical point of view because they hold many rare and endemic plants.

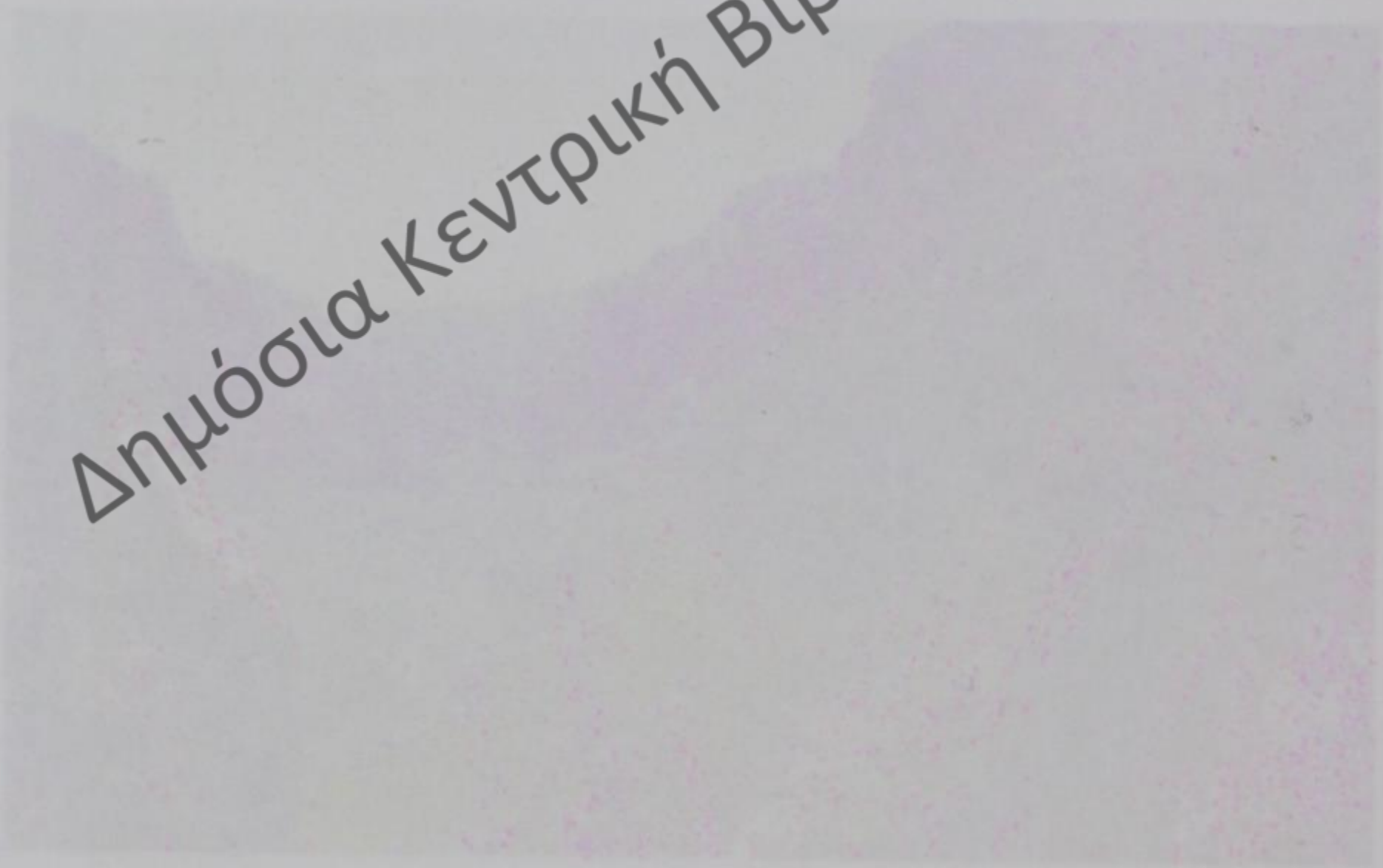


Photograph 18: Vikos ravine. Inside the particular biotopes of the area Vikos occupies an important position not only as an impressive landscape feature. It is the place where the inhabitants took refuge during times of attack and it is the place where the Vikogiatroi: medicine men from Vikos were believed to have collected reknowned herbs. Moreover the ravine with its milder climate could nourish and shelter in 2,000 sheep and goats during winter.



Πολλοί άνθρωποι έχουν βρει ότι η χρήση του διαδικτύου είναι ένας πολύ καλός τρόπος για να βρουν πληροφορίες σχετικά με την υγεία τους. Ωστόσο, είναι σημαντικό να θυμόμαστε ότι η πληροφορία που βρούμε στο διαδίκτυο μπορεί να είναι ακριβής ή λανθασμένη. Γι' αυτό είναι σημαντικό να ελέγχουμε τις πηγές των πληροφοριών που χρησιμοποιούμε.

Δημόσια Κεντρική Βιβλιοθήκη Κόνιτσας

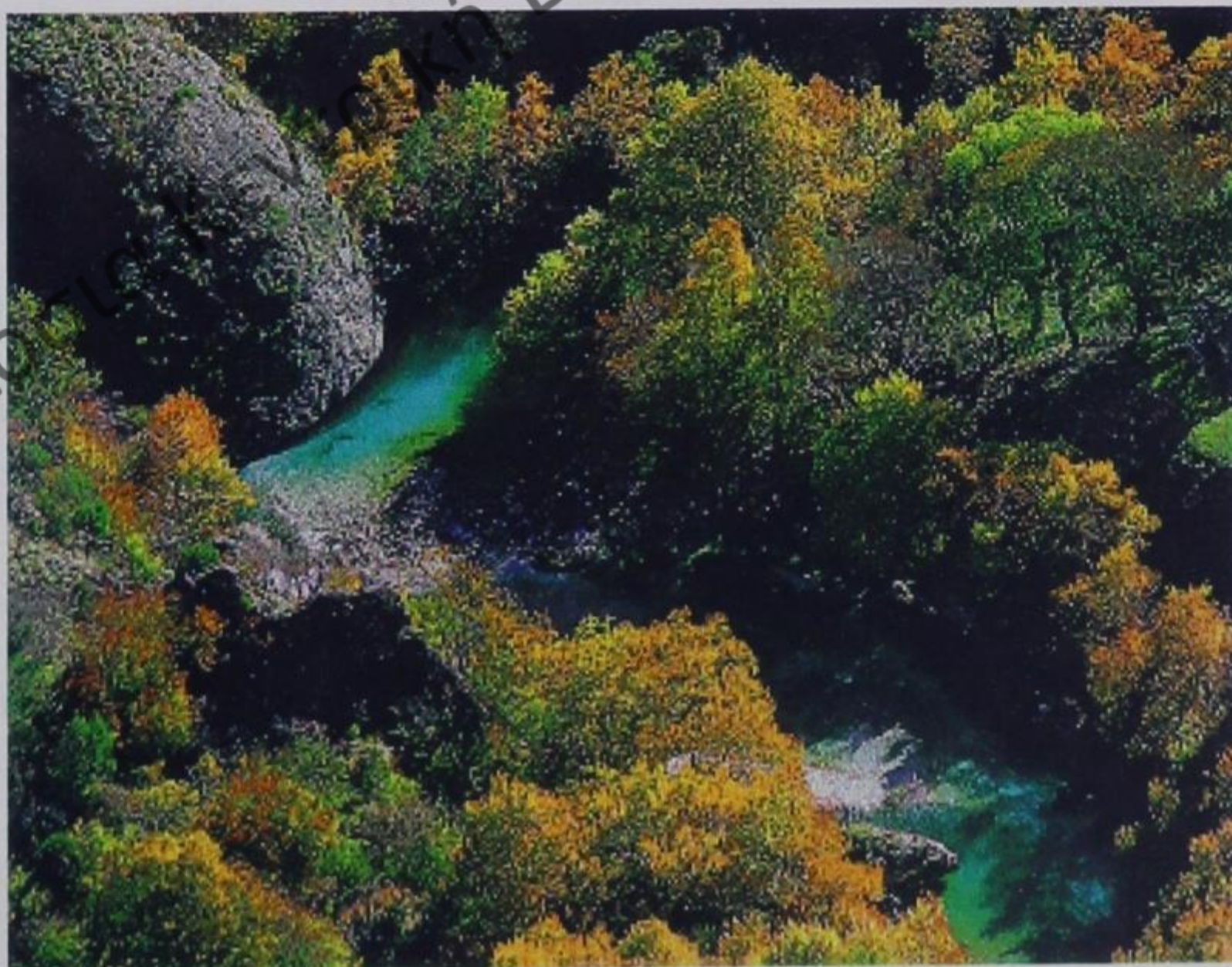


Επιπλέον, η Δημόσια Κεντρική Βιβλιοθήκη Κόνιτσας προσφέρει μια μεγάλη συλλογή βιβλίων, περιοδικών και ηλεκτρονικών πόρων. Η βιβλιοθήκη είναι ανοιχτή για όλους και προσφέρει δωρεάν πρόσβαση σε όλους τους πολίτες. Για περισσότερες πληροφορίες, μπορείτε να επικοινωνήσετε με την υπηρεσία πελάτη της βιβλιοθήκης.

Lower part



Photograph 19: Sclerophyllous forests with *Quercus coccifera*. In these scrublands the vigorous regeneration of sclerophylls due to abandonment is followed by the gradual enclosure of the shrub canopy and the almost total suppression of the herbaceous understory. Such abandoned sclerophyll shrub ecosystems are neither diverse, productive or stable and can be perpetuated and rejuvenated only by fire or cutting and thinning.



Photograph 20: River, with a riparian forest of oriental Plane woods (*Platanion orientalis*). This river constitutes a management paradox for the National Park. Fishing and swimming are prohibited according to the functional regulations of the park. Nevertheless recreational activities such as kayak-ing are permitted and most of the locals continue fishing illegally.

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Appendix 2: PARTICIPANTS ON TO THE STUDY

Table 16: List of people who participate to the study

ID	Name	Gender	Year of birth	Education	Occupation	Social group
1	Aggeliki Tsoumani	F	1948	Primary school	Household	Transhumant
2	Alexia Tsoumani	F	1980	University	Student	Transhumant
3	Amalia Tsoumani	F	1927	No	Household	Transhumant
4	Anastasia Euthimiou	F	1937	Technical school	Animals, household, rent rooms	Native
5	Andreas Apostolou	M	1931	University	Retired teacher	Native
6	Antigoni Zikopoulou	F	1920	Primary school	Household	Native
7	Apostolos Ioannidis	M	1966	Secondary school	Owner of restaurant	Native
8	Aristeidis Ioannidis	M	1929	Secondary school	Stock breeder (goats)	Native
9	Artemi Mpitou	F	1982	Technical school	Student of tourism	Native
10	Athina Zalogou	F	1911	Secondary school	Household	Native
11	Baggelis Xristodoulou	M	1968	Secondary school	Owner of bar, rooms	Native
12	Basileios Kotsoridis	M	1955	Secondary school	Owner of bar and pans ion	Native
13	Basiliki Papakonstantinou	F	1966	Technical school	Retired nurse	Native
14	Basilis Ioannidis	M	1972	University	Stock breeder (goats), owner of pansion	Native
15	Baso Exarxopoulou	F	1945	Secondary school	Household	New
16	Blassos Papakostas	M	1955	Technical school	Stock breeder (cows)	Native
17	Dafni Stasinopoulou	F	1950	University	Promotion and marketing	New
18	Despoina Anagnostopoulou	F	1920	Primary school	Household animals	Native
19	Dimirtios Pantazis	M	1914	Secondary school	Retired, village work	Native
20	Dimitrios Gekis	M	1922	Secondary school	Retired from the army	Native
21	Dimitrios Xristodoulou	M	1935	Secondary school	Retired community officer	Native
22	Eleni Ioannidou	F	1969	Secondary school	Pansion owner	Native
23	Eleni Kotsoridi	F	1925	Primary school	Household, goats	Native
24	Eleni Mitsiadi	F	1915	Secondary school	Retired coordinator of	Native

Table 16. List of participants on the study

ID	Name	Gender	Year of Birth	Education	Occupation	Social Group
1	Agathe Tsoumou	F	1978	High school	Unemployed	Unemployed
2	Alexis Tsoumou	F	1978	High school	Unemployed	Unemployed
3	Anna Tsoumou	F	1978	High school	Unemployed	Unemployed
4	Anna Tsoumou	F	1978	High school	Unemployed	Unemployed
5	Andreas Tsoumou	M	1978	High school	Unemployed	Unemployed
6	Anna Tsoumou	F	1978	High school	Unemployed	Unemployed
7	Agathe Tsoumou	F	1978	High school	Unemployed	Unemployed
8	Anna Tsoumou	F	1978	High school	Unemployed	Unemployed
9	Anna Tsoumou	F	1978	High school	Unemployed	Unemployed
10	Anna Tsoumou	F	1978	High school	Unemployed	Unemployed
11	Anna Tsoumou	F	1978	High school	Unemployed	Unemployed
12	Anna Tsoumou	F	1978	High school	Unemployed	Unemployed
13	Anna Tsoumou	F	1978	High school	Unemployed	Unemployed
14	Anna Tsoumou	F	1978	High school	Unemployed	Unemployed
15	Anna Tsoumou	F	1978	High school	Unemployed	Unemployed
16	Anna Tsoumou	F	1978	High school	Unemployed	Unemployed
17	Anna Tsoumou	F	1978	High school	Unemployed	Unemployed
18	Anna Tsoumou	F	1978	High school	Unemployed	Unemployed
19	Anna Tsoumou	F	1978	High school	Unemployed	Unemployed
20	Anna Tsoumou	F	1978	High school	Unemployed	Unemployed
21	Anna Tsoumou	F	1978	High school	Unemployed	Unemployed
22	Anna Tsoumou	F	1978	High school	Unemployed	Unemployed
23	Anna Tsoumou	F	1978	High school	Unemployed	Unemployed
24	Anna Tsoumou	F	1978	High school	Unemployed	Unemployed

Δημόσια Κεντρική Βιβλιοθήκη Κόνιτσας

ID	Name	Gender	Year of birth	Education	Occupation	Social group
					office	
25	Eleni Oikonomidou	F	1929	Primary school	Owner of rent rooms	Native
26	Eleni Oikonomou	F	1969	Secondary school	Owner of pansion and restaurant	Transhumant
27	Eleni Tsoumani	F	1953	Primary school	Household restaurant from 1998	Transhumant
28	Eleni Xristodoulou	F	1934	Technical school	Household	Native
29	Elisabet Kapelou	F	1921	Primary school	Village work, pansion before	Native
30	Eugnomia Mitsiadi	F	1908	Secondary school	Village & house work	Native
31	Eutuxia Tsoumani	F	1932	Unlettered	Household	Transhumant
32	Giorgos Ioannidis	M	1968	Technical school	Owner of pansion	Native
33	Giorgos Makris	M	1981	University	Student, waiter	Transhumant
34	Giorgos Tsoumanis	M	1941	Primary school	Stock breeder (sheep)	Transhumant
35	Golfo Tseletopoulou	F	1945	University	Teacher	Newcomer
36	Kaiti Papakosta	F	1935	Technical school	Household, cows,	Native
37	Kalypso Mpitou	F	1964	Technical school	Owner of pansion	Native
38	Kleoniki Papakosta	F	1958	Secondary school	Owner of pansion	Native
39	Kostas Diamantis	M	1920	Secondary school	Retired employee	Native
40	Kostas Tsoumanis	M	1972	University	Owner of tavern, and sheep	Transhumant
41	Kostas Tsoumanis (Dias)	M	1959	University	Hotel owner	Transhumant
42	Leuteris Tsoumanis	M	1925	Primary school	Stock breeder (sheep)	Transhumant
43	Maria Koutoulidi	F	1930	Primary school	Animals, household	Native
44	Maxi Xristodoulou	F	1908	Primary school	All village work	Native
45	Meropi Diamanti	F	1924	Primary school	Household	Native
46	Mixalis Basileiou	M	1954	University	Mountain guide	Newcomer
47	Nausika Skourti	F	1927	Primary school	Housework	Native
48	Niki Mitsiadi	F	1947	Secondary school	Household	Native
49	Nikolaos Tsoumanis	M	1917	Unlettered	Retired stock breeder (sheep)	Transhumant
50	Olga Maurotzoglou	F	1978	University	Waitress	Newcomer
51	Panos Sotiropoulos	M	1961	University	Every work	Newcomer
52	Panos Tasioulas	M	1977	Secondary school	Waiter	Transhumant
53	Rodokleia Stara	F	1939	Technical school	Household	Native

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ID	Name	Gender	Year of birth	Education	Occupation	Social group
54	Spyros Tsoumanis	M	1975	Secondary school	Owner of tavern	Transhumant
55	Thanasis Mpitos	M	1958	Technical school	Owner of pansion and restaurant	Native
56	Theodora Tsoumani	F	1926	Unlettered	Household	Native
57	Thomas Mpaltas	M	1941	University	Artist	Newcomer
58	Thomas Tsoumanis	M	1917	Primary school	Retired (1997) stock breeder (sheep)	Transhumant
59	Xristodoulos Stoukidis	M	1925	Secondary school	Retired, mayor 90-94	Native
60	Xristoforos Tsoumanis	M	1941	Primary school	Stock breeder (sheep)	Transhumant
61	Xristos Sotiriou	M	1966	Technical school	Guardian of refuge, builder	Newcomer
62	Xronis Papakostas	M	1926	Primary school	Stock breeder (cows)	Native

* Additionally Kiki Kokkinaki, Nikolaos Staras and Aggelos Ioannidis participated in the pilot study.

Δημόσια Κεντρική Βιβλιοθήκη Κόνιτσας

ID	Name	Gender	Year of Birth	Education	Occupation	Local Group
54	Thomas Tsoumas	M	1952	University school	Teacher	Local Group
55	Thomas Tsoumas	M	1955	University school	Teacher	Local Group
56	Thomas Tsoumas	M	1958	University school	Teacher	Local Group
57	Thomas Tsoumas	M	1961	University school	Teacher	Local Group
58	Thomas Tsoumas	M	1964	University school	Teacher	Local Group
59	Thomas Tsoumas	M	1967	University school	Teacher	Local Group
60	Thomas Tsoumas	M	1970	University school	Teacher	Local Group
61	Thomas Tsoumas	M	1973	University school	Teacher	Local Group
62	Thomas Tsoumas	M	1976	University school	Teacher	Local Group

Δημόσια Κεντρική Βιβλιοθήκη Κόνιτσας

Appendix 3: VISITS

Table 17: Reasons for visits

Why visit?	Description	Code
1	Sheep grazing	GR
2	To find the horses	ED
3	Secondary livestock occupation	GR
4	Passage to another place	W
5	For breeziness	GR
6	Sheep fold/house	GR
7	To collect firewood	CT
8	They stop on the way to the summer pasture	W
9	For timber	CT
10	To find water	GR
11	To find shade	GR
12	Hunting	H/F
13	To take part to advertisement	CA
14	During the war	CA
15	Fishing	H/F
16	Cultivation	CU
17	To collect vultures feathers	CNTFP
18	To collect foliage fodder	CNTFPGR
19	Swimming	R
20	Fodder collection	CNTFPGR
21	To take part to the pine tree plantation in 1959	CA
22	To go to the water-mill	ED
23	For goat grazing	GR
24	Laundry	ED
25	Volunteer work	S
26	Very familiar	ED
27	To rest	R
28	Cow grazing	GR
29	Secondary cultivation occupation	CU
30	To find the dog	CA
31	By motto	CA
32	Fruit collection	CU
33	Walnut collection	CU
34	Mountain tea (<i>Sideritis spp.</i>) collection	CNTFP
35	Nettle collection (edible)	CNTFP
36	Good king henry (<i>Chenopodium bonus henricus</i>) collection (edible)	CNTFP
37	Hazel collection	CNTFP
38	Acorn collection (animal nutrition)	CNTFPGR
39	Fire brand for lighting	CT
40	Mushroom collection	CNTFP
41	Greens, i.e. <i>Taraxacum spp.</i> collection (edible)	CNTFP
42	Cornel collection	CNTFP

Table 1. Summary of the

Code	Description	Year
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Δημόσια Κεντρική Βιβλιοθήκη Κόνιτσας

Why visit?	Description	Code
43	Blackberries collection	CNTFP
44	Hackberry (<i>Celtis australis</i>) fruit collection (edible)	CNTFP
45	Sedge (i.e. <i>Carex rostrata</i> and <i>Carex acutiformis</i>) collection (to use them to make mattresses)	CNTFP
46	Tubers of orchids collection*	CNTFP
47	Medicinal plants collection	CNTFP
48	Honey collection	CNTFP
49	Amaranth collection	CNTFP
50	Fern collection (use by the transhumants as cover material for the roof of cheese stations)	CNTFPGR
51	Brush grass collection	CNTFP
52	Excursion, to walk, with the school as child	R
53	To go to wedding, fiesta	S
54	Eating and drinking	S
55	See and meet people	S
56	With company	S
57	Visit to relatives/friends	S
58	Skiing	R
59	Guided tour of children or friends	S
60	Mountaineers meeting	S
61	Bird watching	R
62	Transportation of tourist or other with mules	T
63	As tourist guide	T
64	To be able to give information to tourist	T
65	To give water to the animals	GR
66	Yellow asphodel (<i>Asphodeline lutea</i>) collection (edible)	CNTFP
67	Alder bark collection (used by transhumant women to colour black the wool cape of transhumant men)	CNTFP

*Dried tubers of many kinds of orchids are still used today to make "salep", a milk-based drink popular throughout the eastern Mediterranean.

Table 17. Summary of the

Case	Description	Year
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Δημόσια Κεντρική Βιβλιοθήκη Κόνιτσας

Appendix 4: BEAUTY

Table 18: Beauty reasons

Why beautiful?	Description	Beauty categories
1	Natural vegetation	Nv
2	View	Nt
3	Altitude	Nt
4	Geological phenomenon, strange, round	Ng
5	Landscape diversity, contrast forest and bare land, flat areas and rock	CH
6	Wild, isolated, virgin	CH
7	Natural beauty that changes seasonally, spring, autumn, see it from far	Pv
8	Tourist attraction, sight	Cu
9	Dewiness, shadow	CH
10	Vegetation covered area, green	Nv
11	Pastureland	Cu
12	The place that helped locals to survive, especially in periods such as during the Turk and German occupation	Pm
13	Cultivation land, terraces	Cu
14	Sun exposure	Nt
15	Rare	DI
16	Useful for collection: tea, foliage, (192 timber, fire wood), hazel nuts, mushrooms, greens	Cu
17	Swimming	Cu
18	Tree species	Nv
19	Unique, special	DI
20	Famous, admired by others: politicians, tourists. Impressive. I show it to friends, I feel proud of it. Where the queen use to fish.	Po
21	Bare, alpine, open, plane, flat, no mountain	CH
22	Oxygen, fresh air	CO
23	Water cold and clean, sources and water use, e.g. for the animals	CO
24	Good memories, good time with friends	Pf
25	Rocks impressive, magic, steep	Ng
26	Recreation, to walk, to go when I will be older	Cu
27	Pleasant, favourite, that change your mood	Pf
28	Quietness, calmness, serenity	Pf
29	Flora	Nv
30	Better than elsewhere	Pv
31	Important for the wildlife, animals & birds, fish, chamois, partridges, vultures	Na
32	Remote	Pa
33	Divinegrandiose	Ps
34	Near	Pa
35	Useless, fallow, cultivated area that became wild with wild old trees,	-Cu

Table 18: Beauty items

Item	Beauty	Quality
1	Beauty	Quality
2	Beauty	Quality
3	Beauty	Quality
4	Beauty	Quality
5	Beauty	Quality
6	Beauty	Quality
7	Beauty	Quality
8	Beauty	Quality
9	Beauty	Quality
10	Beauty	Quality
11	Beauty	Quality
12	Beauty	Quality
13	Beauty	Quality
14	Beauty	Quality
15	Beauty	Quality
16	Beauty	Quality
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18	Beauty	Quality
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21	Beauty	Quality
22	Beauty	Quality
23	Beauty	Quality
24	Beauty	Quality
25	Beauty	Quality
26	Beauty	Quality
27	Beauty	Quality
28	Beauty	Quality
29	Beauty	Quality
30	Beauty	Quality
31	Beauty	Quality
32	Beauty	Quality
33	Beauty	Quality
34	Beauty	Quality
35	Beauty	Quality

Δημόσια Κεντρική Βιβλιοθήκη Κόνιτσας

Why beautiful?	Description	Beauty categories
	abandonment, devastated, decadent. Downgrading, from useful, usefulness	
36	Artificial	-CH
37	I don't got any more, I don't use it, I haven't been, I don't like gardening, I don't go often, I don't have property	-Pa
38	There are better places, not from my favourable, less than I was expected	-Pv
39	Remote	-Pa
40	Rocks = depression	-Ng
41	Cliff, dangerous, fear, wilderness	-Ng
42	Difficult, not accessible, no paths	-Pa
43	Dry	-CH
44	Degraded vegetation, landscape	-CO
45	Common, not special	-DI
46	Natural vegetation	-Nv
47	Ugly	-Pv
48	I have been bored of it	-Pf

Δημόσια Κεντρική Βιβλιοθήκη Κόνιτσας

Κατάλογος	Τίτλος	Αριθμός
	Εισαγωγή	1
	Κεφάλαιο 1	2
	Κεφάλαιο 2	3
	Κεφάλαιο 3	4
	Κεφάλαιο 4	5
	Κεφάλαιο 5	6
	Κεφάλαιο 6	7
	Κεφάλαιο 7	8
	Κεφάλαιο 8	9
	Κεφάλαιο 9	10
	Κεφάλαιο 10	11
	Κεφάλαιο 11	12
	Κεφάλαιο 12	13
	Κεφάλαιο 13	14
	Κεφάλαιο 14	15
	Κεφάλαιο 15	16
	Κεφάλαιο 16	17
	Κεφάλαιο 17	18
	Κεφάλαιο 18	19
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	Κεφάλαιο 29	30
	Κεφάλαιο 30	31
	Κεφάλαιο 31	32
	Κεφάλαιο 32	33
	Κεφάλαιο 33	34
	Κεφάλαιο 34	35
	Κεφάλαιο 35	36
	Κεφάλαιο 36	37
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	Κεφάλαιο 38	39
	Κεφάλαιο 39	40
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	Κεφάλαιο 41	42
	Κεφάλαιο 42	43
	Κεφάλαιο 43	44
	Κεφάλαιο 44	45
	Κεφάλαιο 45	46
	Κεφάλαιο 46	47
	Κεφάλαιο 47	48
	Κεφάλαιο 48	49
	Κεφάλαιο 49	50
	Κεφάλαιο 50	51
	Κεφάλαιο 51	52
	Κεφάλαιο 52	53
	Κεφάλαιο 53	54
	Κεφάλαιο 54	55
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	Κεφάλαιο 60	61
	Κεφάλαιο 61	62
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	Κεφάλαιο 64	65
	Κεφάλαιο 65	66
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	Κεφάλαιο 68	69
	Κεφάλαιο 69	70
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	Κεφάλαιο 73	74
	Κεφάλαιο 74	75
	Κεφάλαιο 75	76
	Κεφάλαιο 76	77
	Κεφάλαιο 77	78
	Κεφάλαιο 78	79
	Κεφάλαιο 79	80
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	Κεφάλαιο 86	87
	Κεφάλαιο 87	88
	Κεφάλαιο 88	89
	Κεφάλαιο 89	90
	Κεφάλαιο 90	91
	Κεφάλαιο 91	92
	Κεφάλαιο 92	93
	Κεφάλαιο 93	94
	Κεφάλαιο 94	95
	Κεφάλαιο 95	96
	Κεφάλαιο 96	97
	Κεφάλαιο 97	98
	Κεφάλαιο 98	99
	Κεφάλαιο 99	100

Δημόσια Κεντρική Βιβλιοθήκη Κόνιτσας

Appendix 5: IMPORTANCE

Table 19: Importance reasons

Why important?	Description	Importance categories
1	Natural vegetation	E
2	View	AE
3	Altitude	AE
4	Geological phenomenon, strange	E
5	Landscape diversity, contrast forest and bare land, flat areas and rock	AE
6	Wild, isolated, virgin	E
7	Natural beauty that changes seasonally, spring, autumn, see it from far	AE
8	Tourist attraction, sight	U
9	Dewiness, shadow	N
10	Vegetation covered area, green	E
11	Pastureland	U
12	The place that have helped locals to survive, especially in periods such as during the Turk and German occupation	H/C
13	Cultivation land, terraces	U
14	Sun exposure	U
15	Negative value	P
16	Rare	-E
17	Useful for collection: tea, foliage, hazel nuts, mushrooms, greens	U
18	Swimming	N
19	Tree species	E
20	Unique, special	E
21	Famous, admired by others: politicians, tourists. Impressive. I show it to friends, I feel proud of it. Where the queen use to fish.	S
22	Alpine, plane, flat, no mountain	U
23	Alpine	U
24	Open area, no vegetation	U
25	Oxygen, fresh air	N
26	Impressive. I show it to friends, I feel proud of	S
27	Water and soil restraint	E
28	Good for the village	U
29	Profitable, exploitative	U
30	Hunting	N
31	Water cold and clean	E
32	Good memories, good time with friends	P
33	Successful	S
34	Rocks impressive, magic, steep	AE

Inventory	Description	V/L
1
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Δημόσια Κεντρική Βιβλιοθήκη Κόνιτσας

Why important?	Description	Importance categories
35	Property	U
36	Familiar, I see it every day, I know it well	U
37	Recreation, to walk, to go when I will be older	N
38	Pleasant, favourite, that change your mood	N
39	Quietness, calmness, serenity	N
40	Permanent, conserved	E
41	Organic	U
42	Flora	E
43	Better than elsewhere	P
44	The mules pass the winter	U
45	Important for the wildlife, animals & birds, fish, chamois, partridges, vultures	E
46	Electromotive	U
47	National park	S
48	Passage	U
49	Important for nature	E
50	Vikos practical doctors	SC
51	Fish	E
52	Foliage	U
53	Hay	U
54	Traditional way of life	H/C
55	The reason I am here, they have attract me	P
56	Remote	E
57	It is in danger to be destroyed, burned, vulnerable	E
58	Scientific value	SC
59	Divinegrandiose	SP
60	Laundry	U
61	Interesting for development	U
62	Useless, fallow, cultivated area that became wild with wild old trees, abandonment, devastated, decadent. Downgrading, from useful, usefulness	-U
63	Artificial	-S
64	Abandonment, devastate, decadency	-U
65	I don't go any more, I don't use it, I haven't been, I don't like gardening, I don't go often, I don't have property	-P
66	Timber	-U
67	Fuelwood	-U
68	Water presence sources and water use, e.g. for the animals	-U
69	Beautiful combination of the village + landscape	AE
70	Moral, lesson of the power of nature	S
71	There are better places, not from my favourable, less than I was expected	-P
72	I lost my property	-P
73	Protected area= I can't use it	-S
74	Bare land	-AE

Δημόσια Κεντρική Βιβλιοθήκη Κόνιτσας

Why important?	Description	Importance categories
75	Rocks=depression	-AE
76	Cliff, dangerous, fear, wilderness	-N
77	Dangerous, fear, wilderness	-N
78	Hard life	-P
79	Difficult, not accessible, no paths	-N
80	Degraded vegetation, landscape	-AE
81	Common, not special	-E
82	Wildlife (bears, wolfs)	-E
83	Natural vegetation	-E
84	Ugly	-AE
85	I have been bored of it	-P

Δημόσια Κεντρική Βιβλιοθήκη Κόνιτσας

Κατάσταση	Περιγραφή	Αριθμός

Δημόσια Κεντρική Βιβλιοθήκη Κόνιτσας

Appendix 6: CHANGE

Table 20: Causes of change

Why change?	Description	Code
1	Less livestock	A
2	Depopulation by local people	S
3	More tourist	S
4	More Albanians	S
5	Physical changes e.g. seasons	PH
6	Fruit trees became dry	A
7	Terraces felt down	A
8	Vegetation condensation, regeneration	F
9	Abandonment	A
10	Technical works	T
11	Water quality	D
12	Kajak activities	D
13	Litter	D
14	Very dense vegetation	F
15	Closure of paths and routes due to vegetation	F
16	Old trees	F
17	Useless/ fallow/ no profitable	U
18	Wild	A
19	Less or no partridges	W
20	Lots of thorns	A
21	Less fish	W
22	Less or no vultures	W
23	No trees pruning	F
24	I don't know, I haven't been for years	KN
25	From bare land became forest	F
26	It kept its character, no change	PR
27	An equilibrium in danger	PR
28	I don't have anywhere to do the washing	U
29	Brown bears and wild pigs came	W
30	It gained value	VF
31	Environmental degradation	D
32	I have never mind it	KN
33	Less snow	CL
34	National park=protection	PR
35	Wildlife refuge	PR
36	It was burnt	D
37	A building felt	A
38	Less grass for grazing	CL

Date	Description	Wk
1	1st change	1
2	2nd change	2
3	3rd change	3
4	4th change	4
5	5th change	5
6	6th change	6
7	7th change	7
8	8th change	8
9	9th change	9
10	10th change	10
11	11th change	11
12	12th change	12
13	13th change	13
14	14th change	14
15	15th change	15
16	16th change	16
17	17th change	17
18	18th change	18
19	19th change	19
20	20th change	20
21	21st change	21
22	22nd change	22
23	23rd change	23
24	24th change	24
25	25th change	25
26	26th change	26
27	27th change	27
28	28th change	28
29	29th change	29
30	30th change	30
31	31st change	31
32	32nd change	32
33	33rd change	33
34	34th change	34
35	35th change	35
36	36th change	36
37	37th change	37
38	38th change	38
39	39th change	39
40	40th change	40
41	41st change	41
42	42nd change	42
43	43rd change	43
44	44th change	44
45	45th change	45
46	46th change	46
47	47th change	47
48	48th change	48
49	49th change	49
50	50th change	50

Δημόσια Κεντρική Βιβλιοθήκη Κόνιτσας

Why change?	Description	Code
39	Path repair	T
40	Water drain	T
41	Walls	T
42	Pools	T
43	Signs	T
44	Vestiary	T
45	Drilling	T
46	Mountain refuge hut expansion	T
47	Main road construction	T
48	Water quantity	CL
49	Forest	F
50	Road construction	T
51	Illegal fishing	-PR
52	I have lost my property	-U
53	Poaching	-PR

Δημόσια Κεντρική Βιβλιοθήκη Κόνιτσας

