KNOWLEDGE AND ATTITUDES OF FORESTRY STUDENTS ON NATURE AND PROTECTED AREAS IN GREECE

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ABSTRACT

The study and academic training of citizens in issues of forest and protected areas shapes the environmentally friendly attitudes to graduates. Attitudes include public beliefs and assessments of ecosystem management activities. In education it is necessary to redefine our values and ethical norms and obligations towards man and the natural environment. The field of study and gender have an impact on environmental attitudes and behaviors of students. The protected areas are subject to ample scientific research and have educational interest. The purpose of this research is to measure attitudes on Protected Areas (PA) of Forestry students in Greece. The questionnaire used as a research tool, based on the scale FVS (Forest Values Scale) which is suitably adapted for PA. Based on the results of this survey it was found that the majority of the sampled students showing more biocentric attitude to Protected Areas which is largely due to the subject of their studies. With regard to gender on the positive attitude towards the environment was found to be statistically significant in favor of women. Students largely support positive environmental attitudes and found that there is a relationship between the level of knowledge about protected areas and the attitude towards the environment.

Keywords: Protected Areas, Environmental Attitudes, Environmental Education.

JEL Classification: Q20, I29

1. INTRODUCTION

Education is the tool of citizens shaping based on critical and research thinking. The study and academic training of citizens in issues of forest and nature shapes the environmentally friendly attitudes to the graduates. According to Jobes (1991) the young and educated citizens often have romantic attitude to the naturalness of a region such as the national park of Yellowstone. Essential role in education for cultivating attitudes and behavior play the family and the school (Ajzen & Fishbein, 2000; Frick *et al.,* 2004; Matzanos *et al.,* 2012). This educational framework seeks to establish a sustainable school (Breiting *et al.*, 2005; Gough, 2006), promotes collective learning (Henderson & Tilbury, 2004), encourages participatory processes (Sutton & Kemp, 2002), prepares students for action (Huckle, 2010), assist in the formation of responsible environmental behavior (Hwang *et al.,* 2000). Attitudes include public beliefs and assessments of ecosystem management activities (Reading *et al.,* 1994). In

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education it is necessary to redefine our values and ethical norms and obligations towards man and the natural environment (Flogaiti, 2006).

It is an important aspect of educational research and psychology to study science education (Lavonen *et al.,* 2008). The scientific field of study and gender has have an impact on environmental attitudes and behaviors of students. In many surveys referred environmentally friendly attitudes of students studying objects on the environment (Ntouras, 2013).

The protected areas are subject to much scientific research and educational interest (Mose & Weixbaumer, 2007; Efthimiou, 2015). According to Prato and Fagre (2005), protected areas are harmonious human and nature coexistence spaces (Mantzaros *et al.,* 2012). Greece has a large number of protected areas which are developed and support many environmental education programs at all levels of education (Papapanagou *et al.,* 2005; Efthimiou, 2015). Curricula for protected areas is scarce and there are only courses for training people involved in their management (Matzanos *et al.,* 2012). In higher education there is a corresponding course and students are educated in schools with forestry and environmental studies subject. The experiential use of protected areas in the context of environmental education can contribute to the enrichment of knowledge, the development of environmentally friendly attitudes and perceptions on protected areas (Matzanos *et al.,* 2010; Papadomarkakis, 2011; Matzanos *et al.,* 2012).

The purpose of this research is to measure attitudes on Protected Areas (PA) of Forestry students in Greece using a questionnaire based on the Forest Values Scale (FVS) suitably adapted for PA.

2. METHODS AND MATERIALS

The survey was conducted during the first 2 months of 2016, and 143 students of the Forestry Department of Central Greece took part. As a research tool the survey used self-report questionnaire which consisted of two parts. The first part is related to demographics of the sample, such as sex, age, urbanity region of origin, preference-selection line of the section and further containing two control questions of the students' knowledge on protected areas, which accept as answer the "Correct" "False" and "Do not know". These questions have created a knowledge survey variable, which graded with 1 each correct answer, and graded with zero each incorrect or the answer "Do not know". Therefore those who have not answered any question properly graded to zero, those who answered correctly only one question scored one, and those who correctly answered both questions were scored with two.

The second part concerned the FVS scale (Steel *et al.,* 1994), which covers forests and forest areas. The questionnaire was modified and adapted so as to respect IP, but without changing the spirit and the target of the questionnaire, which is to investigate the sample attitude towards the subject matter and to determine whether this is a humanistic (Anthropocentric), that is oriented to human needs and requirements, without paying emphasis to the environment, Intermediate, where the focus is on human and environmental needs and Biocentric balanced, which special emphasis is given on the environment and stated in this research with the variable FVS. The scale consists of eight statements Likert-type proposals from 1 (strongly disagree) to 5 (strongly agree). For the total score of the scale, the statements-sentences 1, 3, 4 and 5 has been reversed so that higher scores indicate biocentric attitude. The data is then aggregated, and ratings range from 8 to 40. Lower scores indicate anthropocentric attitude, mean score indicates balanced attitude, and a higher score shows biocentric attitude to PA and their use.

Three individual subscales can also be created for this global scale: humanistic, Intermediate, and biocentric. The humanistic subscale consists of items 1, 3, 4 and 5 and

measures the anthropocentric attitude. The scores are summed and ranges from 4 to 20. Lower scores indicate more humanistic attitude. The Intermediate subscale comprised of the elements 2 and 6. The scores on this scale are summed and range from 2 to 10. Higher scores indicate neutral or stopover. The subscale Biocentric consists of items 7, 8 and measures the biocentric attitude. The scores are summed and range from 2 to 10. Higher scores indicate more biocentric attitude.

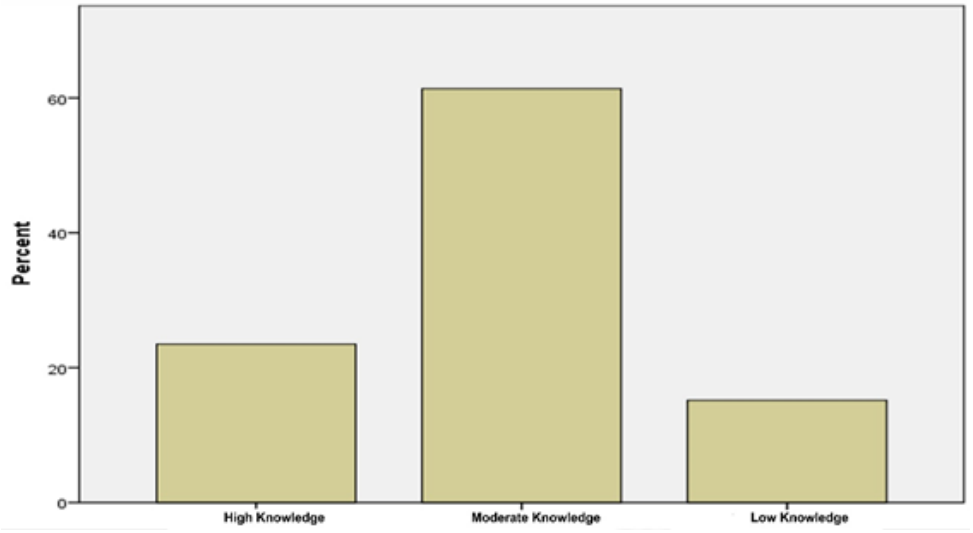
Cronbach a reliability index calculated above 0.80 in the initial study, meanwhile, for the sample this ratio was 0.43 and was considered low. Low alpha value may be due to the low number of questions-statements or low correlated or non-existence of data homogeneity (Tavkol & Dennick, 2011). Correcting reliability was done by excluding statements-proposals 2 and 3 of the FVS scale, bringing the Cronbach a to 0.71, which is a high value for the credibility of the research tool. Then an adjustment of the scoring scale, which now consists of six statements proposals, with a minimum score of 6 and a maximum 30 was made. This variable describes the three categories and the overall range from 6 to 30, is 24, therefore, the width of each class is 8. Scores in the range of 6-14 relate to anthropocentric attitude, scores between 15 and 22 relate to Intermediate and scores between 23 and 30 relate to Biocentric attitude. Finally, a sub scaling was carried out after remodeling concerning the following scales: Anthropocentric at 3-15, Intermediate 1-5, and biocentric 2 to 10.

3. RESULTS

In total 143 students participated in the research. Of these 90 (62.9%) were male, and 53 (37.1%) were female. The 19.3% resides in a settlement under 1500 inhabitants, the same percentage resides in the range of 1500 to 5000 inhabitants and 61.4 in settlement of over 5000 people. Attending the 1st, 3rd, 5th and 7th semester, respectively 28%, 39.9%, 18.9% and 13.3%. Students in order of preference of the department was from 1 to 5 choice in 42.1%, from 6 to 10 to 31.4% over the 26.4% 10th.

At questions of the students' knowledge on protected areas, from all the valid answers, 23.5% did not respond properly to any question, the 61.4% responded correctly to one question, while 15.2% answered correctly on two questions as shown in Figure 1. We can define, respectively, three knowledge categories as low, moderate and high knowledge as shown in Figure 1.

Figure 1: Knowledge Categories for Protected Areas



Source: Own Elaboration

Since all of the FVS-scale proposals statements, the answers cover the spectrum from Anthropocentric to biocentric attitude. If this variable describes the three categories, with a total range of 24, from 6 to 30, shows that scores of 6-14 related humanistic attitude, scores from 15 to 22 relate Stopover and scores from 23 to 30 relate biocentric attitude. Based on the categories of scores achieved, results that 7 people (4.9%) had a humanistic attitude, 61 (42.7%) had intermediate attitude and 75 (52.4%) had biocentric attitude, as shown in Table 2.

Table 2: Scores of FVS

Score	Freq.	%
12	5	3,5
13	1	,7
14	1	,7
16	3	2,1
17	1	,7
18	8	5,6
19	7	4,9
20	9	6,3
21	10	7,0
22	23	16,1
23	14	9,8
24	11	7,7
25	17	11,9
26	24	16,8
27	4	2,8
28	2	1,4
29	2	1,4
30	1	,7
Total	143	100,0

Source: Own Elaboration

A similar result occurs when separately examine each subscale. Specifically humanistic attitude based on the variable Anthropocentric, has 4.9% of the sample, while based on the variable Biocentric 52.4% have biocentric attitude, as shown in Table 3.

Table 3: Attitude FVS

	Freq.	Percent
Antropocentric	7	4,9
Intermediate	61	42,7
Biocentric	75	52,4
Total	143	100,0

Source: Own Elaboration

Demographic differences among of students were examined in FVS. After Levene control for gender variations, it was found that fluctuations were equal. It was found statistically significant differences in the averages of the scale in terms of gender, with females F = 4.05, p <0.05, in average. The average for men (M = 2.40, SD = 0.60) was lower than that of women (M = 2.60, SD = 0.57). Women show more biocentric attitude than men. It was not found statistically significant differences in the averages of the FVS variable for the other demographic characteristics examined.

There were differences of averages in the variable FVS regarding the level of knowledge, which is related to the attitude of the students towards the environment. After Levene control for gender variations, it was found that fluctuations were unequal and t test was used to correct it. We found statistically significant differences in the averages of the scale to the level of knowledge about Protected Areas (F = 4.99, p <0.05) in average. The average of those with a low level of knowledge (M = 2.19, SD = 0.75) was lower than those with medium level of knowledge (M = 2.58, SD = 0.50). Those who have a low level of knowledge about Protected Areas, have more humanistic attitude towards those who have moderate knowledge level (Table 4). It was not found statistically significant differences in the averages of the variable FVS sample for other knowledge levels tested.

Table 4. Control of averaging differences of FVS regarding sex

FVS/Knowledge	N	Mean	SD	FVS - Bonferroni			
Low Knowledge	31	2,19	0,749	(I) Low Knowledge	(J) Moderate Knowledge	(I-J)	Sig.
Moderate Knowledge	81	2,58	0,497			-0,387*	0,05
High Knowledge	20	2,45	0,605				

*. The mean difference is significant at the 0.05 level

Source: Own Elaboration

There were differences of averages controls the variable FVS regarding the level of knowledge. The other demographic characteristics of the sample were investigated without finding statistically significant differences.

4. CONCLUSIONS

The results of this survey revealed that the majority of the sampled students show more biocentric attitude to Protected Areas which is largely due to the object of their studies. Differences between male and female respondents are statistically significant. Women were more sensitized towards the environment, showing more biocentric attitude than men. This result is in agreement with results of analogous investigations where «Girls tend to have more favorable attitude towards the environment» (Ntouras, 2013). These findings are consistent with those of other researcher, indicating that such behavior could be seen as a way to take care of their children and socialization based on family (Tikka *et al.,* 2000; Sutton & Kemp, 2002). According to Tikka, Kuitunen & Tynys, (2000), "the concern felt by women for nature and the environment could be seen as a way to take care of their children, because a clean and safe environment is a prerequisite for prosperity and survival" (Ntouras, 2013). According to Müderrisoğlu & Altanlar (2011) female undergraduate students tend to hold significantly more positive attitudes towards the environment. According to the results of this study, students largely support positive environmental attitudes.

Alp, Ertepinar, Tekkaya and Yilmaz (2006) showed a statistically significant effect of the degree of environmental knowledge in environmental attitudes of students (Ntouras, 2013) corroborating with the results of the present study.

The oldest conceptions of Protected Areas was the absolute protection of them and the exclusion of human activities (Hatziharalambous, 2006). This perception gradually proved exaggerated or even wrong (Karavellas *et al.,* 2003). Gradually, new attitudes have emerged in relation to strategies which aimed to facilitating of local participation, where the competent authorities manage natural resources with local value (Francis, 1996; Conway, 1997; Mehta & Heinen, 2001; Nepal, 2002; Tampakis, 2009). Perceptions of local people contain useful information's that could be incorporated into the decision making process and lead to the reduction of conflicts (Trakolis, 2001).

4.1 Limitations and future research

Although we used both online survey and paper pencil format, we did not succeed in accessing as large a sample of farmers as we had wished. We should aim to conduct interviews with farmers to gain more information about meadow management in practice. About the research of knowledge's level although we didn't use a comprehensive and complete research tool, there were only two questions with three possible answers. Therefore the probability of accidental correct response is important and can influence all of the answers which given. Further research with comprehensive research tool of knowledge is required to be implemented. Nevertheless, despite the limitations mentioned, the existence of a relationship between the level of knowledge about Protected Areas and the attitude towards the environment, agree with the results of other investigations. Specifically, the research of Hausbeck, Milbrath & Enright (1992), found that although the students had rather low scores on questions of knowledge, showed higher scores for awareness and concern for the environment.

This study examined the attitudes and knowledge of students studying the natural and forest environment. The next step will be a comparison of the current results with students of Landscape Architecture that have more anthropocentric field of study and then link the findings of the research with the environmental education practice. The findings have important value for teachers of secondary and higher education who study and teach environmental issues. Experience has shown that the development and design of appropriate educational material to high school students in Cyprus increased positive attitudes of students towards the environment (Chatzichampis *et al.,* 2016).

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