

BEING A PROFESSIONAL FORESTER: THE VIEWS OF FORESTRY STUDENTS IN A GREEK UNIVERSITY

Evangelos Manolas¹, Michael Littledyke², and Stilianos Tampakis¹

¹Department of Forestry and Management of the Environment and Natural Resources, Democritus University of Thrace, Ath. Pantazidou 193, 68200 Orestiada, Greece.

E-mail: emanolas@fmenr.duth.gr; stampaki@fmenr.duth.gr

²School of Education, University of New England, Armidale, NSW 2351, Australia.

E-mail: mlittled@une.edu.au

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Abstract

An individual's profession is much more than simply earning money and indeed of paramount importance for his or her sense of identity and consequently to his or her self-esteem. The aim of this paper is to discover how the students of the Department of Forestry and Management of the Environment and Natural Resources of the Democritus University of Thrace, see the profession of the forester, which values they expect to satisfy through their profession in the future and in which job position they wish to work. The paper also attempts to connect values with job positions. The methodology used in this paper, including the questionnaire, may be used to investigate the expectations and problems of students in other disciplines, in other university departments.

Key words: factor analysis, job positions, profession of forester, professional values, students of forestry.

Introduction

The serious problems of sustainability facing our planet, such as climate change and ecosystem degradation, show that human intervention in nature is truly global in character and make changes in the models of development an unavoidable imperative. International intergovernmental meetings, for example the Durban Climate Change Conference (UNFCCC 2011), have stressed the need for agreed changes in energy generation and production processes, as well as changes in consumption patterns. In this sense, de-

velopment should be based more on prevention rather than dealing with problems after they have occurred (Stern 2007).

In Greece, the last three decades have seen an unprecedented growth of several programmes of studies offered by a variety of post-secondary education institutions. All these programmes aim to equip graduates with the skills necessary to deal effectively with the serious challenges to achieve sustainability lying ahead. The professions these graduates will enter are green ones (Spyropoulou 2005). Being a forester is one such profession and, indeed, one of the oldest.

In Greece, the first university department dedicated to Forestry was founded in 1917 in Athens, but ten years later it moved to Thessaloniki becoming one of first departments of the Aristotle University of Thessaloniki. Department of Forestry and Management of the Environment and Natural Resources of the Democritus University of Thrace, in the city of Orestiada, Prefecture of Evros, accepted its first students in the academic year 1999–2000.

According to Article 1, Presidential decree 203/99, the aim of the Department is to foster and promote Forestry in particular and Environmental Science in general, giving particular emphasis to the area of Natural Resource Management and to the training of scientists capable to investigate, research, understand and apply modern techniques for the development, improvement, protection and management of forests and forest lands and of the natural environment (Department of Forestry and Management of the Environment and Natural Resources 2011).

Given that an individual's profession is much more than simply earning money and indeed of paramount importance for his or her sense of identity and consequently to his or her self-esteem (Shaffir and Pawluch 2003), the aim of this paper was to discover how the students of the Department of Forestry and Management of the Environment and Natural Resources of the Democritus University of Thrace see the profession of the forester, which values they expect to satisfy through their profession in the future and in which job position they wish to work. The paper also attempts to connect values with job positions.

A profession is "a type of job that needs special training or skill, especially one that needs a high level of education:

the medical/legal/teaching, etc. profession" (Oxford ... 2005). According to another definition the term profession means "a disciplined group of individuals who adhere to high ethical standards and uphold themselves to, and are accepted by, the public as possessing special knowledge and skills in a widely recognized, organized body of learning derived from education and training at a high level, and who are prepared to exercise this knowledge and these skills in the interest of others. Inherent in this definition is the concept that the responsibility for the welfare, health and safety of the community shall take precedence over other considerations" (Southwick 1997).

Values are "beliefs about what is right and wrong and what is important in life" (Oxford ... 2005). Ferrante (1992) has defined values as "general conceptions about what is good, right, appropriate, worthwhile, and important with regard to modes of conduct and states of existence".

When we talk about green professions we mean people who hold jobs "that contribute appreciably to maintaining or restoring environmental quality and avoiding future damage to the Earth's ecosystems... Specifically, but not exclusively, this includes jobs that help to protect ecosystems and biodiversity; reduce energy, materials, and water consumption through high efficiency strategies; de-carbonize the economy; and minimize or altogether avoid generation of all forms of waste and pollution" (Green Jobs ... 2008).

We obtain and learn our values from our family, from life experiences and from the education we receive. The values we hold have a direct impact on our careers or behavior at work (The relationship ... 2012). Values can provide a strong cen-

tral defining framework, contributing significantly to the identity of the profession itself (The importance ... 2012).

Research Methods

The students who participated in this research project were the “active” students of the Department of Forestry and Management of the Environment and Natural Resources of the Democritus University of Thrace at Orestiada, Greece. Given that the timing for carrying out a research project is important (Daoutopoulos 1994), our research was carried out during the examination period of February 2010, and included the students we call active students of the department ($n=225$).

For this research project we used self-management questionnaires (Siardos 1999). The questionnaire was no bigger than one page to minimize problems of student participation in the process (Figure 1). The time required for the completion of the questionnaire was about five minutes. Before completion of the questionnaire, the students were given explanations about the purposes of the research and were also told that the questionnaire was voluntary and anonymous. All students agreed to complete the questionnaire. The questionnaire involved students’ responses to statements or questions on a scale of 1–10 for strongly negative to strongly positive responses.

We applied factor analysis to the multi-theme variables, which refer to the assessment of professional values and the job positions students prefer. Factor analysis is a multivariate technique for identifying whether the correlations between a set of observed variables stem from their

relationship to one more latent variable in the data, each of which takes the form of a linear model (Field 2005). The aim of factor analysis is to find the factors that are common in a group of variables (Sharma 1996) and involves interpreting structure rather than variability (Karlis 2005). Also, the aim of factor analysis is to reproduce, to the greatest extent possible, the correlations among variables, using the smallest possible number of factors, as well as leading to a solution that will be “unique” and which can be easily interpreted (Siardos 1999).

We used principal components method, which is based on a spectrum analysis of the variance (correlation) table (Karlis 2005). The selection of the number of factors is a dynamic process, which presupposes the evaluation of the model in a repeating fashion. In particular, we can use Kaiser’s rule, the variance percentage that can be explained or the scree plot (Karlis 2005). According to Kaiser’s rule used in our research the limit for getting the appropriate number of principal components is determined by the values of the typical roots which are bigger or equal to one (Frangos 2004, Field 2005).

The rotation of principal components matrix aims at increasing the interpretive ability of the model (Karlis 2005). The rotation was done via Kaiser’s method of maximum variance rotation (Harman 1976). The aim of this method is the appearance in the main factors of loadings with high values and of loadings with zero or almost zero values, i.e. we aim at the maximization of variance in each factor (Siardos 1999).

Finally, we investigated the factors that can interpret the correlations among the variables of our data, as well as attempted to interpret them (if this is possible) (Djou-

students in the Department of Forestry and Management of the Environment and Natural Resources constitute 37.3 % of the student body, while the male students constitute 62.7 % of the student body. The duration of their studies is five years. 20.4 % of the students answering the questionnaire were attending their first year of studies, 20.4 % their second year, 19.1 % their third year of studies 13.8 % their fourth year, 22.2 % their fifth year, while 4 % had completed all five years but had not obtained their degree yet.

The first value question in the questionnaire asked students to rate their satisfaction from their choice to study in the Department of Forestry and Management

of the Environment and Natural Resources. In a scale from 1 to 10 (where 1 means very dissatisfied and 10 very satisfied) they rated their satisfaction as 7.389 (Std. dev. = 1.934). With regard to satisfaction, no difference was found in comparisons between male and female students or between different years of study.

This mainly positive satisfaction with their subject choice logically originates from their expectations regarding their future profession as foresters. Therefore, we asked the students to assess in a scale from 1 to 10 how different values connected with the profession of the forester (1 meant most unimportant and 10 most important). From the results present-

Table 1. Assessment by forestry students on what they value with regard to their job in the future.

| Values | Mean | Std. deviation |
|--|------|----------------|
| Safety. A stable job on which I can rely for my living. | 8.35 | 2.191 |
| Recognition. People will know me through my work. | 6.90 | 2.646 |
| Helping people. Through my work I can help fellow human beings. | 7.17 | 2.311 |
| Money. The amount of money which I will earn from my job. | 7.65 | 2.087 |
| Personal satisfaction. My work will make me feel that I am doing something worthwhile. | 7.84 | 2.242 |
| Respect. People around me will admire me and respect me. | 7.00 | 2.565 |
| Competition. I would like to solve new and difficult problems. I would like to work as hard as I can take. | 6.66 | 2.572 |
| Creativity – Originality. My work will depend on my own ideas. | 7.19 | 2.361 |
| Concern for knowledge. Through my work I will learn and discover new things. | 7.37 | 2.260 |
| Entertainment. I would like my job to be entertaining. | 7.08 | 2.392 |
| Free time. It is important not to work extra hours in order to have plenty of free time. | 7.32 | 2.527 |
| Power. I would like to be able to make decisions and be the “boss”. | 6.96 | 2.612 |

ed in Table 1, with regard to their future profession having a stable job is ranked as the most important value (8.35). They believe that their future job should make them feel secure, safe and enabling them to base their lives on it. This is what any working person would want from his / her job (Kalogirou 2000).

The next most important ranked value is personal satisfaction (7.84), meaning that through their work they would feel that they are doing something worthwhile. This is followed by the amount of money they expect they will earn from their work (7.65). Next in line is concern for knowledge (7.37), which means that through their work they will learn and discover new things. The next most important value is free time (7.32), i.e. not having to work extra hours so that they have plenty of free time for leisure and family. Next in order of importance is creativity – originality (7.19), so that the outcome of their work efforts would be influenced by their own ideas, influencing their sense of involvement and personal contribution. Next in line is helping other people, reflecting social commitment (7.17). Seeing work as entertainment and enjoyable was a value that was assessed with 7.08 while the value of being admired and respected by the people around you, linked to social esteem, was assessed with 7.00.

The values which received the lowest marks are power associated with social hierarchy (6.96), i.e. being able to make decisions and be the “boss”, recognition (6.90), which means that people will get to know them through their work and, finally, competition (6.66), which means that the students would like their job to give them the opportunity to solve new and challenging problems as well as apply themselves diligently.

In trying to make best use of and better interpret our data we applied to the above

variables factor analysis. Before the application of factor analysis we tested our data in order to ensure that they are appropriate for our purpose and, in addition, we investigated whether all the variables are appropriate for use in the model (we did the same regarding the application of factor analysis, which follows). The results of the factor analysis are presented in Table 2. We see the burdens, which are the partial correlation coefficients of the twelve variables with each of the three factors, produced from the analysis. The bigger the burden of a variable in a factor, the more this factor is responsible for the total variance of degrees in the variable we study. The variables that belong in each factor are those for which the burden (columns 1, 2, 3) is bigger than 0.5 in the particular factor.

According to these results, the first factor includes the variables helping people, competition, creativity – originality, concern for knowledge and entertainment. We can call this factor professional values that refer to “personal completeness”. The second factor called “professional recognition” includes the variables safety, recognition, money, personal satisfaction and respect. The third factor called “social recognition” includes the variables free time and power. Indeed, the variable personal satisfaction has a high value in the first factor, too (0.460) while the variable money has a high value in the third factor (0.479) (Table 2). So, the fact that these variables are found in two factors makes it possible for us to accept that they constitute a connection between the factors: the variable personal satisfaction between the first and the second factor and the variable money between the second and third factor.

The students of forestry were also asked to assess, in a scale from 1 to 10, their preferences regarding job positions

Table 2. Table of factor burdens with regard to professional values, before and after rotation.

| Variable | Factor Burdens | | | | | |
|--------------------------|-----------------|--------|--------|----------------|--------------|--------------|
| | Before rotation | | | After rotation | | |
| | 1 | 2 | 3 | 1 | 2 | 3 |
| Safety | 0.391 | 0.573 | -0.221 | -0.062 | 0.722 | 0.073 |
| Recognition | 0.610 | 0.470 | -0.278 | 0.176 | 0.796 | 0.082 |
| Helping others | 0.624 | -0.068 | -0.175 | 0.528 | 0.377 | 0.061 |
| Money | 0.445 | 0.528 | 0.218 | -0.055 | 0.540 | 0.479 |
| Personal satisfaction | 0.638 | 0.076 | -0.295 | 0.460 | 0.537 | -0.010 |
| Respect | 0.645 | 0.313 | -0.240 | 0.300 | 0.688 | 0.095 |
| Competition | 0.727 | -0.329 | -0.077 | 0.763 | 0.208 | 0.130 |
| Creativity – originality | 0.664 | -0.480 | -0.016 | 0.808 | 0.039 | 0.129 |
| Concern for knowledge | 0.625 | -0.554 | -0.117 | 0.843 | 0.006 | 0.006 |
| Entertainment | 0.622 | -0.283 | 0.150 | 0.623 | 0.089 | 0.305 |
| Free time | 0.449 | 0.088 | 0.693 | 0.172 | 0.033 | 0.812 |
| Power | 0.519 | 0.166 | 0.669 | 0.175 | 0.138 | 0.833 |

(1 refers to the lowest preference while 10 to the highest preference). Table 3

shows that the job positions in the public sector are the ones that are most preferred by the students. Indeed, working for the Forest Service is the job position with the highest ranked value (7.86). Next in order of importance are the Fire department (7.17), local self-government – prefectures (6.93) and some other public service job (6.82). The job positions with the lowest values are: working in their own business – office (6.03), in a busi-

Table 3. Assessment by students regarding preferred job positions.

| Variable | Mean | Std. deviation |
|---|------|----------------|
| Forest service | 7.86 | 2.365 |
| Fire department | 7.17 | 2.902 |
| Local self-government – prefectures | 6.93 | 2.473 |
| Some other job position in the public sector | 6.82 | 2.267 |
| Job position in private sector as a salaried employee | 5.23 | 2.409 |
| Own business – office | 6.03 | 2.811 |
| Business – office in cooperation with colleagues | 5.64 | 2.541 |
| Some equivalent position abroad | 5.54 | 3.070 |

ness – office in cooperation with colleagues (5.64), some equivalent position abroad (5.54) and in the private sector as a salaried employee (5.23).

Factor analysis applied to the above variables (Table 4) indicates that the first

variable includes the four first variables in Table 3 and can be called “work in the public sector”, while the second factor which includes the rest of the variables can be called “work in the private sector”.

Next, in each factor of the above factor analyses, through the help of the variables that belong to them, we calculated the mean (Table 5). As a follow up of the above process, we applied factor analysis on

Table 4. Factor burdens regarding job positions before and after rotation.

| Variable | Factor Burdens | | | |
|---|-----------------|-------|----------------|--------------|
| | Before rotation | | After rotation | |
| | 1 | 2 | 1 | 2 |
| Forest Service | 0.749 | 0.187 | 0.748 | -0.187 |
| Fire department | 0.699 | 0.299 | 0.757 | -0.065 |
| Local self-government – prefectures | 0.660 | 0.509 | 0.822 | 0.139 |
| Some other job position in the public sector | 0.669 | 0.340 | 0.750 | -0.015 |
| Job position in private sector as a salaried employee | -0.287 | 0.686 | 0.069 | 0.740 |
| Own business – office | -0.396 | 0.686 | -0.027 | 0.791 |
| Business – office in cooperation with colleagues | -0.401 | 0.764 | 0.005 | 0.863 |
| Some equivalent position abroad | -0.360 | 0.381 | -0.139 | 0.505 |

these factors (accepted as variables). Our goal was to investigate how the factors of the above two factor analyses are connected. Therefore, we see in Table 6 that the first factor includes the variables personal completeness, social recognition and work in the private sector and can be called as “least accepted choice”. The second factor includes the variables professional recognition and work in the public sector and can be called “most accepted choice”.

Table 5. Assessment of the factors by forestry students.

| Variable | Mean | Std. deviation |
|----------------------------|------|----------------|
| Personal completeness | 7.10 | 1.784 |
| Professional recognition | 7.55 | 1.656 |
| Social recognition | 7.14 | 2.251 |
| Work in the public sector | 7.20 | 1.933 |
| Work in the private sector | 5.61 | 1.971 |

Discussion and Conclusions

The analysis shows that students are mainly satisfied by their choice to study in the Department of Forestry and Management of the Environment and Natural Resources. The most important value with regard to their future profession is job safety. Next in importance come personal completeness, money, concern for knowledge, free time,

Table 6. Factor burdens, before and after rotation.

| Variable | Factor Burdens | | | |
|----------------------------|-----------------|--------|----------------|--------------|
| | Before rotation | | After rotation | |
| | 1 | 2 | 1 | 2 |
| Personal completeness | 0.746 | 0.189 | 0.712 | 0.293 |
| Professional recognition | 0.757 | -0.331 | 0.410 | 0.717 |
| Social recognition | 0.682 | 0.188 | 0.660 | 0.256 |
| Work in the public sector | 0.458 | -0.717 | -0.060 | 0.848 |
| Work in the private sector | 0.449 | 0.690 | 0.772 | -0.287 |

creativity – originality, helping others, entertainment, respect, power, recognition and competition.

The ranking of professional values by the students indicates that some values refer to how they themselves feel as individuals, how they perceive their position regarding work and how they perceive their position in the wider social context. Through the application of factor analysis we grouped the above variables in three factors, which we called “personal completeness”, “professional recognition” and “social recognition”.

Students’ priority is to get a job in the public sector and their highest preference is the Forest Service. This choice of theirs can be connected to the fact that working for the public sector is something that provides greater professional safety, which is very important to the students. Indeed, the content and the orientation of their studies directs them towards this particular destination, e.g. by completion of their fourth year of studies all students do their one-month long apprenticeship at the Forest Service. Unfortunately, today, there are very few jobs in the Greek public sector, something which, it must be noted, has

also been identified by researchers for sometime now (Spyropoulou 2005). For this reason we consider that the education provided to forestry students should change to provide wider professional opportunities, possibly through modification of their program of studies and

through modification of the professional orientation programs, which are currently available. Indeed, although their program of studies includes a course aimed at the development of business skills, this aspect could be developed further to provide generic skills, which may be of value in applying to jobs in a range of contexts. Some modifications of the program of studies could be arranging for students to do their practicum in companies and other appropriate organizations of the private sector or inviting people from such organizations to speak to students. Other improvements, which could help in the professional orientation of students, could be the creation of a special career office, assigning advisors to students (something which is currently done by available faculty members), improving student scientific writing, student presentation skills (for public speaking), student training with regard to research methodologies and improving student foreign language skills, especially English. With regard to English language training, in addition to the existing four courses in English, specialist terminology in English could also be introduced in class lectures and laboratory exercises (Kadis et al. 2011).

Through the application of factor analysis we grouped the above variables into two factors, which we called “work in the public sector” and “work in the private sector”. The analysis shows that working abroad as foresters is higher in their preferences than working in the private sector in Greece as salaried employees.

Finally, it seems that the students associate professional recognition through work in the public sector, while personal completeness and social recognition is connected with work in the private sector. Working for the public sector provides safety but it also restricts a person’s freedom to be creative. It is also more bureaucratic. In the private sector there is no safety but people are freer to innovate. Unfortunately, students have learnt through previous socialization that despite its drawbacks working for the public sector is better.

The results of this research paper can indeed be used for guiding and helping the students of the Department of Forestry and Management of the Environment, Democritus University of Thrace, in deciding correctly about their future. However, the questionnaire used in this paper and indeed the methodology of this research effort may be used to investigate the expectations and problems of students in other disciplines, in other university departments.

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