

## **Position and the Importance of Wildlife Undergraduate Education on Environmental Protection in Turkey**

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**Abstract.** Wildlife includes terrestrial and aquatic vertebrates in Turkey. Nowadays, sustainable management of wildlife is one of the most popular topics in every country. Illegal hunting and habitat deterioration are among the greatest problems in terms of wildlife protection in Turkey. The major causes of this problem are the poor public awareness and the incompetence in wildlife education and management. The history of wildlife education and related topics in the world universities go back 200 years in Europe and in America and the first undergraduate department that was named ‘Wildlife’ was initiated in 1933 in the United States of America. Until today, wildlife education was considered as a secondary topic in various departments and as a result of the rising environmental awareness in the past 20 years wildlife has found a place as an independent department in the undergraduate education in Turkish universities. The first department with word ‘Wildlife’ included in its title was initiated in 2009 in Turkey, under the title of ‘Department of Wildlife Ecology and Its Management’. Although the public awareness is rapidly increasing, serious problems are still being encountered due to the lack of educated managers who were specialised in wildlife management.

*Keywords:* wildlife education, wildlife management, environmental protection, Turkey.

### **AIMS AND BACKGROUND**

The meaning of the term ‘wildlife’ is very subjective worldwide, depending on the point of view of the user. In general, it is used for all wild animals and plants. However, the term mainly covers the terrestrial and the aquatic vertebrates<sup>1</sup>. The word wildlife, whose meaning varies in different countries, is used to embrace the terrestrial and the aquatic vertebrates (mammals, birds, fish, reptiles and amphibians) in Turkey. Nowadays, topics regarding the environmental protection and the protection of biological diversity, hence the protection of wildlife and its sustainable management are of the most attractive issues throughout the world. Illegal hunting and habitat destruction are among the greatest problems in terms of wildlife protection in Turkey, as well as in other places throughout the world. The major causes of this problem are the poor public awareness and the incompetence in wildlife education and management.

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The public awareness in terms of environmental protection is rapidly increasing in Turkey as well as in other parts of the world. However, the difficulties arising from the lack of much needed qualified managers who are equipped with environmental awareness on the protection of wildlife including such significant components as mammals, birds, fish, reptiles and amphibians exist. The existence of university undergraduate level programs on the education and the training of qualified wildlife managers is crucial.

The history of wildlife education and related topics in the world universities go back 200 years or more in Europe and in America<sup>2</sup> and the first undergraduate department that was named 'Wildlife' was initiated in 1933 in the United States of America<sup>3</sup>. Until today, wildlife education was considered as a secondary topic in various departments including the Department of Forestry Engineering and as a result of the rising environmental awareness in the past 20 years wildlife has found a place as an independent department in the undergraduate education in universities. Although 3 wildlife departments exist in the Turkish universities under the name of the Department of Wildlife Ecology and Management, it will take time for qualified managers to be educated and trained as well as for them to acquire positions and to succeed.

## HISTORY OF THE WILDLIFE EDUCATION IN THE WORLD

The wildlife education is usually provided within the economic zoology and for forestry programs in the form of animal damage control or within biology programs in a form describing species and their life histories<sup>4</sup>. However, every university focuses on different aspects of the topic. On the other hand, wildlife is usually taken the form of game management in application. The history of the education in universities on game management goes back for 200 years or more. However, the first education in the form of an undergraduate department was initiated in the United States of America, in the University of Wisconsin – Madison by the establishment of a Game Management Chairmanship for Prof. Aldo Leopold. Six years later, Leopold has established the first Department of Wildlife Management in the same university<sup>3</sup>.

Similarly, the wildlife management in Europe was also initiated as game management. The first Game Management education, which provides the basis for wildlife education, had been initiated in Hungary towards the end of the 18th century, during the reign of the Austro-Hungarian Empire in 1797. In addition, another Game Management Department has been initiated in Austria in 1806. In the department that was established in Hungary, wildlife has been considered together with agriculture and related divisions whereas in the German school, the subject of wildlife was investigated together with forestry. In the following

years, the German school has also affected the Hungarian education. Today, 2 important wildlife departments exist in Sopron and Gödöllo in Hungary, where the roots of the wildlife education belongs, whereas 2 departments exist in Austria, which is also another school regarding the subject and 3 departments exist in Germany<sup>2</sup>.

Nowadays, North America, Western Europe, Australia, Japan and New Zealand lead the advances in education for many of the developing countries. However, specifically the wildlife departments in Canada and the United States mark the wildlife education and management in many continents and countries around the world<sup>5</sup>. Many Asian, European and Eastern Asian students as well as students of African origin are educated in these universities, mostly through scholarships, and they return to their countries either to take role in education or to take active role in wildlife management. Besides, many countries provide wildlife education parallel to the programs in America. A suitable example would be Romania<sup>6</sup>. In addition, although some countries accept the courses in the United States almost exactly, other countries adopt the curriculum according to the needs of their country. An example for this case would be the system in India where only 3 courses are different<sup>7</sup>. However, the wildlife education in the United States and Canada are not exactly the same, but they are given differently based on the developmental processes of both countries under the influence of various events. Also, various countries are included in student and faculty exchange programs. The European Union aims to enhance the cultural dialogue, to create the European education and research environment and to create a unified European point of view between the member and the candidate countries through encouragement of the increase in student and faculty mobility via the Socrates and the Erasmus programs. This mobility is expected to increase the mutual understanding and support among the EU countries. A similar initiative has begun in 1991 in the Eastern Asia and is still going on<sup>8</sup>.

The worldwide wildlife education is usually positioned among the faculties and the departments providing education on forestry and agriculture. Faculties and departments focusing on fishery and 'newly popular' natural resources follow these. Each of these departments focuses on a different aspect of wildlife education. In the United States, which is one of the leading countries in wildlife education, some departments concentrate on the losses in wildlife focusing on economical aspects whereas in other departments, the wildlife education concentrates on the biology and the ecology of species. Some departments discuss what first to teach and what then should follow and other departments discuss the biological principles and their reflection on the management of wildlife<sup>4</sup>. Although the public relations on the management of wildlife were not discussed much 20 years ago in the American education, nowadays, it has a crucial role in education<sup>9,10</sup>. In addition, the need and the necessity for the wildlife education to be continuous is discussed in the American education

authorities<sup>4,9</sup>. Furthermore, in order for the biological diversity to be preserved, i.e. for Conservation Biology, the application management sciences: Wildlife, Forestry Engineering and Fishery; the basic biological sciences: Biology, Zoology and Ecology; other sciences: Planning, Education, Law, Veterinary Medicine, Chemistry, Physics, Geography, Geology, Economics, Politics, Sociology and Anthropology should preserve communication and education in an inter-disciplinary manner<sup>11</sup>.

Many departments providing wildlife education for 2 years exist. Nowadays, even people graduating from 4-year departments have difficulties in finding jobs. This problem has begun at a much earlier time for the one-much-needed graduates of the 2-year departments<sup>12</sup>. Currently, much emphasis is laid on shared responsibilities between the students, the faculty and the employers because of this problem of employment as well as the issues regarding as to what kind of an education should be provided<sup>13</sup>.

## HISTORICAL DEVELOPMENT OF THE UNDERGRADUATE LEVEL WILDLIFE EDUCATION IN TURKEY

The education related to wildlife has been established in forestry, agriculture or fishery related faculties and departments in Turkey as well as in other parts of the world. The Departments of Forestry Engineering intensely cover wildlife related courses in their undergraduate curriculum in Turkey and many other undergraduate programs including Biology, Fishery Products, Fishery Technology Engineering, Veterinary Medicine and Agricultural Engineering address wildlife only partially from certain aspects. For instance, Departments of Fishery Products or Fishery Technology Engineering only directly address fish related portion of wildlife whereas the Departments of Forestry Engineering, Biology and Agricultural Engineering are superficially or partially interested in birds, mammals, reptiles, amphibians, fish and insects. However, until today, undergraduate wildlife education is considered only as a secondary topic in all undergraduate curricula.

Among these undergraduate programs, the history of the Department of Forestry Engineering which is the sole department with a course on 'Wildlife' among many courses with biological and ecological content and which graduates the most equipped engineers regarding wildlife, goes back to the second half of the 19th century. Until then, the forestry actions that were taken in the country were attempted to be conducted and controlled through the limited and the local sanctions envisaged by the sultan edict, fetva, orders or the district laws<sup>14</sup>. The actions regarding forestry, which were carried out through the method of vassalage, had become part of an impractical and an inefficient system with the empire losing its power. In the year 1839, the economically disrupted state had tried to reorganise the ways to benefit from the forests in order to obtain more

from the resources although the attempts had not been very successful. Of the two forest specialists brought from France as a consequence of the actions mandated by the Reform Edict of the Ottoman Empire in 1856, Louis Tassy has founded the first School of Forestry in 1857 in Istanbul<sup>14</sup>. The forestry education, which was initiated in Turkey, then, is still continuing in a total of 9 Faculties of Forestry in the undergraduate level education. The first education of 'Wildlife', which was neglected for a long time and which was always considered as a secondary topic in other departments, was initiated in 2009 in Karadeniz Technical University, Faculty of Forestry, under the title of 'Department of Wildlife Ecology and Management'. This was followed by a similar department which was initiated under the same name in Isparta, in the Faculty of Forestry, in 2010, and in Duzce, in the Faculty of Forestry, in 2012. Although the departments have not begun education yet, it is still an important initiative.

Wildlife course which is directly related to the wildlife and which has been taught from the earliest times onwards in the Departments of Forestry Engineering, has been given under different titles that were called as Hunting, Game Science, Wild Animal Science, Wildlife Science and its Management throughout history.

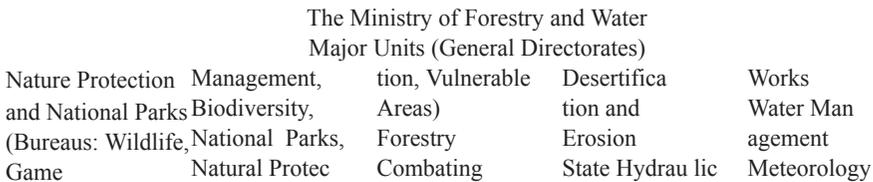
The initiation time of the course which was taught under the name 'Hunting' until 1945 is not known<sup>15</sup>. The course was named as the Game Science between 1945 and 1950 and as Wild Animal Science after 1982. The title of the course was Wildlife Science between 1984 and 2005 (Ref. 16). The course, currently known as 'Wildlife' in the 9 Departments of Forestry Engineering in Turkey is defined as a course to investigate the habitat of wild animals in their natural environment, including their reproduction, their processing, their protection and their planning, as well as a science investigating the morphology and the biology of these animals together with the methods for their hunting<sup>16</sup>.

In addition to this course, courses such as Sylviculture, Forest Maintenance and Forest Management include important topics regarding how forest works should be carried out protecting and enhancing the wildlife are taught in the Departments of Forestry Engineering. In addition, several courses, which are directly related to wildlife with similar outline to courses taught in other departments, including Forest Zoology, Botany, Spermatophyta, Forest Entomology, Fishery Products and Forest Ecology, fulfill considerable amounts of credits in the curriculum. However, also in the Department of Forestry Engineering, the topics related to wildlife were always ignored, considered of secondary importance and the topic was not paid the necessary attention that it required. On the other hand, in compliance with the law number 5531 defining the actions of Forestry Engineering, the topics related to wildlife were listed under the topics regarding

Forest Engineers<sup>17</sup>.

## WILDLIFE MANAGEMENT IN TURKEY AND ENVIRONMENTAL PROTECTION

The management of wildlife in Turkey had been under the control of Forest Management Chiefs which are the rural units of Directorate General of Forestry conducting the forestry and the environmental activities from 1839 until the beginning of 1990's. Excluding urban areas such as the cities and the towns, all environmental protection actions are executed by these chiefs who are all forest engineers. The actions for the protection of environment and the wildlife were carried out in various structural arrangements after 1990's and from 2003 onwards, they have been carried out under the guidance of General Directorate of Environmental Protection and National Parks (Fig. 1). Both the Forest Management Chiefs and the most authorized wildlife specialists in the National Parks are forest engineers. Although the first Department of Wildlife Ecology and Management was initiated in 2009, the much needed wildlife specialists are still selected amongst the forest engineers. However, these forest engineers, who are the most authorised people in regard to the protection of wildlife and environment, acquire an insufficient and a secondary education on wildlife.



**Fig. 1.** Organisational chart of the Ministry of Forestry and Water

The issue of wildlife, which did not receive the necessary attention it needed during the undergraduate education, was naturally put aside as a secondary issue by the authorities and the managers who are actively on duty. This situation is one of the major reasons for the inadequacy in obtaining successful results in wildlife management. Almost all the forest engineers, who are the initiators of wildlife in Turkey, accept the fact that for long years, the forest areas were only used for log processing, in other words for logging by the lumberjacks.

Although in the past few years this point of view is beginning to be replaced by focusing on the 'non-log' forest products, still, the required care and attention has not been paid to wildlife.

Consideration of the game as a secondary product throughout the historical development of the Game and Wildlife Management in Europe has caused a conflict between the landowners of forest areas even until today<sup>2</sup>. Although Europe has gotten rid of this view, the Turkish Forestry and Wildlife Management, which had been developed under the influence of the French and the German education systems, could not get rid of this view for a long time. The unjust naming of the wild animals as the secondary products of a forest was emphasised in the introduction part of one of the rare and the most important studies regarding the wildlife in Turkey – 'Game Animals and Hunting'<sup>18</sup>. The introduction part of another study – 'The Inventory of Wildlife' also mentions that not enough attention has been paid to wildlife<sup>19</sup>.

The management of wildlife was mostly handled through general bureaus that were concerned with environmental protection and wildlife management in Turkey since the beginning of 1990's. Today, this is handled through the General Directorate of Nature Protection and National Parks with its center being in Ankara and with 81 bureaus, one in every city. Until the beginning of 1990's, the issues regarding wildlife were handled through the Forest Chief Managers who were all Forest Engineers without exception. Following the uptake of wildlife related issues by the General Directorate of Nature Protection and National Parks from the General Directorate of Forestry, the specialisation areas of the personnel were enriched. Although the people working on wildlife management were mostly forest engineers until the past 10 years, this situation is changed and specialists from areas including Biology, Environmental Engineering, Fishery Products Engineering, Agricultural Engineering and Forest Industrial Engineering were beginning to outnumber the former crew. In addition, many units requiring wildlife specialty provide positions even for specialists from very diverse areas such as chemists and architects. Unfortunately, although much less than it was in the past, like in many areas, politics is involved in the assignment of the positions requiring specialty. Almost with every change of government, few or many people who learned the specialty required for their job (even if it was learned during that position at the job), are removed and replaced by other people. Those people leaving find themselves in a job, which they do not know at all and the people replacing them are also unaware of the required specialty of their jobs. Even when the job is challenging for people who had an incompetent and a secondary education on wildlife, for people who are so off this topic to be unsuccessful is almost unavoidable.

The fallow deer (*Dama dama*) population in Turkey is a good example of this failure in wildlife management. Fallow deer is an endangered species whose

homeland is Anatolia and Mesopotamia and for whose protection and reproduction special care has been taken. Despite the efforts, today, the fallow deer only lives in Antalya Duzlercami Wildlife Enhancement Area in a population of 70–100 on the verge of extinction. However, in many countries where the fallow deer is populated by human intervention including Germany, France, Spain, Poland, Austria and the United States of America, tens of thousands of this species are allowed as game animals. Although approximately 50 thousand of these animals are allowed for hunting annually in Germany<sup>20</sup>, the population in Turkey is about to become extinct and this summarises the situation perfectly. Similarly, although approximately 1 200 000 roe deer (*Capreolus capreolus*) are allowed for hunting annually in Germany<sup>20</sup>, in Turkey, which has a significant and more potential, only a permission for 49 roe bucks as game was allowed<sup>21</sup>. Although a significant improvement is observed in the management of wildlife in comparison to the past years, the achievements are still below the aimed targets.

## CONCLUSIONS

Many initiatives for establishing ‘Departments of Wildlife Ecology and Management’ have been undertaken in many Faculties of Forestry in Turkey following the establishment of the first of such departments in 2009. Taking into consideration the fact that only 3 such departments exist in Germany, 2 in Austria and 2 in Hungary, 3 or 4 departments will be sufficiently enough in Turkey where a single department accepts 3 or 4 times more students than any department in Europe or the United States. With similar reasoning, the number of 2-year education departments on this topic should not be increased drastically, either. As of today, the curriculum in the Department of Wildlife Ecology and Management follows the curricula in Western European and North American universities, closely. In the future, the courses should be updated according to the advances regarding the topic but at the same time, regional and domestic issues should not be ignored during these adjustments.

The examination for the selection of the personnel for the management of wildlife should include professional topics rather than general topics in general culture, mathematics, physics, chemistry, geography, history and philosophy. In appointments, care should be taken to bring people with a background of wildlife education in suitable positions.

People with the required education and experience on wildlife should be kept at their appointed positions regardless of the changes in the government. The payment of the mobile personnel who generally have lower salaries and who are at the field for long hours should be adjusted such that the positions become attractive.

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