

Student science teachers' ideas about endangered bird species: Hermit ibis, chukar partridge

Osman CARDAK and Musa DIKMENLI

Selcuk University Ahmet Kelesoglu Faculty of Education, Konya, TURKEY

Email: ocardak@selcuk.edu.tr, mdikmenli@selcuk.edu.tr

Received 18 Feb., 2009

Revised 25 Jun., 2009

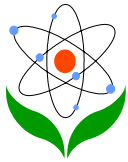
Contents

- [Abstract](#)
 - [Introduction](#)
 - [Research Aims](#)
 - [Materials and Methods](#)
 - [Instruments for data collection](#)
 - [Data analysis](#)
 - [Results and Discussion](#)
 - [a. Protection of endangered bird species](#)
 - [b. Word associations for “Chukar partridge” and “Hermit ibis”](#)
 - [Conclusions](#)
 - [References](#)
-

Abstract

In this study, student science teachers' ideas and views of endangered bird species and their protection are analysed. 173 student science teachers studying at Selcuk University in the department of science education, participated in the study. Data analysis provides evidence that the majority of students thought that human intervention is required to protect endangered birds. Student teachers gave their opinions relating to hunting prohibitions, preventing pollution and protecting the environment and appropriate environmental possibilities for reproduction of bird species. Literature on the subject has been scanned, results have been discussed, and some recommendations relating to protection of endangered bird species have been made.

Keywords: Primary science education, student science teachers, endangered bird species

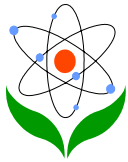


Introduction

Turkey is located in a region where the continents of Asia, Europe and Africa, called the Former Land Masses, are in close proximity to each other. The majority of its land is located in Asia, as the Anatolian Peninsula on the southwestern end of the continent, and the rest lays in the Thrace Peninsula, a part of the Balkan Peninsula, on the southeastern edge of Europe. Turkey is mathematically located between the 26th and 45th east longitudes, according to the main meridian (Greenwich) and 36th-42nd north latitudes according to the equator. From this viewpoint, Turkey is both an Asian and European country, and it has considerable diversity in terms of bird fauna (Yarar & Magnin, 1997). While Turkey is a very important country in terms of birds, bird and nature protection has not yet been developed (Kiziroglu, 1987; Kiziroglu, 1989). *Bird Life International* and the *Natural Life Protection Association (NLPA)* are the first documents that demonstrated the importance of Turkey in terms of birds and habitats, and threats they encounter, as noted in the *Important Bird Areas of Europe* in 1989. The NLPA has achieved noteworthy success in the field of protection, primarily in wetlands, which have constituted the majority of protected areas in Turkey since 1990 (e.g. Göksu Delta, Büyük Menderes Delta, Kızılırmak Delta, Sultan Marshes, Ereğli Marshes, and Burdur Lake) (Yarar & Magnin, 1997). The total number of bird species in Turkey is 456, of which 304 are local and 152 are migratory species (Bilkent University, 2009). Turkey is at the intersection of Africa, Europe, and Asia, thus providing two major routes for bird immigration. One route includes the Marmara Sea, Central Anatolia and Hatay Belen Gateway, while the other goes through the Caucasus, Coruh River, East Anatolia and Hatay Belen Gateway.

Species identification tasks are generally accepted as fundamental aspects of biodiversity (Randler & Bogner, 2006). When teaching pupils how to identify species, classification books, outdoor lessons or hands-on approaches are often preferred to teacher-centered ones involving factual knowledge transfers (Randler & Bogner, 2002). A pre-pilot study by Randler (2003) pointed to a tendency of novice pupils to assign birds to an order or family.

According to the most optimistic estimations of scientists, who draw attention to the fact that the rapid extinction of living species may be approximate to the effects of a nuclear war, a fifth of living species in the world are in danger of becoming extinct in 20-30 years. The populations of birds that were once symbols of different countries are rapidly declining (Tucker & Heath, 1994). Changing natural conditions, such as unconscious hunting, the use of chemical substances and the destruction of natural living spaces, including forests and fresh-water springs, are among the most significant factors. These species, faced with the danger of becoming extinct, play a significant role in protection of the ecological balance. For example, sparrow hawks and eagles are classified as predatory birds and they are the enemies of mice. Various pests, such as mice, can be harmful to agricultural products and are among falcons' food sources. Everything is balanced in nature, and birds have a role to play in this balance. Helping students gain bird identification skills will help them protect these endangered species. Hence, environmental and biodiversity education should be included in the school curriculum. In an effort to increase students' responsible attitudes toward nature, Randler and Bogner (2006) provide pupils with a hands-on lesson regarding the natural history of six bird species. Findings from this important study show that students' levels of species identification skills, and their knowledge in selected facets of biodiversity, increase in a learner-centered educational setting.



Research Aims

This article deals with student science teachers' ideas about endangered bird species and the protection of birds. The students involved were majoring in primary school and secondary school biology and, as future environmental educators, should have ideas about environmental issues such as biodiversity and endangered species. The aims of the study are to:

- research concepts and opinions of student science teachers concerning the protection of endangered bird species; and
- determine the associations of student science teachers with the terms Chukar partridge (*Alectoris chukar*) (Young, 1981) and Hermit ibis (*Geronticus eremita*).

This study aims to answer the following questions:

- What are the best ways for protecting endangered species as suggested by student science teachers?
- What associations do student science teachers form in their minds when they hear the names of these bird species?

Materials and Methods

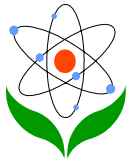
The study was held in Turkey, during April and May 2007. The study's sample was composed of 173 student science teachers studying primary school science education. The average age of the student science teachers was 20, with the youngest being 18 and the oldest being 25. The time to answer related questions was 20-25 minutes.

Instruments for data collection

Student science teachers who participated in the study filled out a questionnaire composed of open-ended questions and word associations. The words, Chukar partridge and Hermit ibis were given to all participants, and they were asked, "What are the best ways for protecting the endangered species?" Participants were allowed to freely express their opinions. This data collection method provides the opportunity to participants' opinions (Sato & James, 1999; Koskinas, 2000).

Data analysis

Data obtained from word associations and the open-end question were analysed. Word associations with the same meanings were encoded together. Words with the same meanings as frequently used words, but used less frequently were grouped into subsets of the more common words. Words were categorized using a semantic correlation criterion (Sato & James, 1999; Flogaitis & Agelidou, 2003) and usage frequency of words in each category were calculated. Answers given to the open-end questions were also divided into categories. Answers with the same meanings were encoded in the category of frequently given answers. For example, answers such as "feeding in winter" or "filling up birds" were replaced by the



encoding “feeding birds”. Answers, and their usage frequency, constituted an indicator for what the answers given to the questions meant.

Results and Discussion

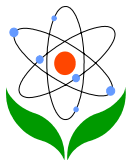
Data relating to answers in the questionnaire are indicated in the tables. Data was divided into two sections. The first indicates categorization and frequency of answers related to protection of endangered bird species, while the second indicates categorization and frequency in associations of the words Chukar partridge and Hermit ibis.

a. Protection of endangered bird species

Answers given by student science teachers related to the protection of endangered bird species were divided into five categories (a total of 415). Eighteen different answers were obtained after similar answers were grouped. These were divided into five categories, qualified with the key words and usage frequency of words in each category noted. Table 1 shows that participants have the opinion that human intervention (e.g., laws protecting birds, protection of the environment, preventing pollution, protecting natural environments, forestation, regulations on reproduction zones) is required for the protection of endangered bird species. The high frequency of answers mentioning bird hunting prohibitions is remarkable. Required controls, especially in hunting areas, have been conducted frequently, especially in 2007. It is also understood from Table 1 that a certain number of people did not answer the question or did not have sufficient information to deal with the issue of how endangered bird species can be protected. Even though all participants are future educators, only a small minority emphasized the importance of education in the protection of endangered bird species.

Table 1: Protection of endangered bird species (categories and answers given according to categories and frequency of answers)

Categories	Answers given according to each category and their frequency	Total frequency of answers included in each category
Ineffective	I cannot help them (4)	4
No answer	I have no answer (24) I don't know (3)	27
Human interventions	Prohibition on hunting and shooting birds (109) Feeding birds (78) Protection of natural environments (58) Ensuring birds to reproduce through scientific means and in cages (49) Decreasing protection (16) Incubation and protection of eggs (14) Performing forestation (13) Developing artificial incubation (10)	359



	Laws protecting birds (9) Performing cloning (3)	
Education	Educating students in schools (10) Encouraging protection through the internet, television and magazines (7) Providing education in protection associations (3) Educating people (2)	22
Inherent value	I love them, we should let them live (3)	3

b. Word associations for “Chukar partridge” and “Hermit ibis”

Hermit ibis

Student science teachers' associations with Hermit ibis are divided into four categories and composed of 417 associations. Thirteen different associations emerged after the integration answers with the same meaning. They were also divided into four categories and eventually a calculation was made relating to the frequency of word groups in each category.

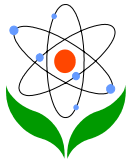
Table 2: Associations for Hermit ibis word (categories and answers given according to categories and frequency of answers)

Categories	Answers included in each category and their frequency	Total frequency
<i>No answer/I don't know</i>	No answer or I don't know	68
<i>Bird</i>	Endangered species (123), hairless and red head (54), bird (41), eating fish (15), black colour (4)	237
<i>Emotional dimension</i>	Ugly appearance (19), feeling of resentment (8), innocent pose (7), feeling of being rare (7)	41
<i>Environment</i>	Sanliurfa city (53), zoo (13), steppe (5)	71

The bird category is again dominant, as indicated in Table 2. It seems that student science teachers have some knowledge about the endangered characteristics, appearance and living environment of the Hermit ibis. It is also apparent that 68 student science teachers did not give an answer or answered as I don't know.

Chukar partridge

Associations of student science teachers are divided into four categories composed of 601 associations. Twelve different associations emerged after the integration of these words that had the same meaning. They were also divided into four categories, and a calculation relating to the frequency of word groups in each category was made. Table 3 indicates that the bird



category is, once again, dominant. It would appear that student science teachers have some knowledge about the Chukar partridge, such as that it is hunted for its delicious meat, its appearance, existence of songs and folk-songs about the Chukar partridge and its ecology. It also seems that 45 student science teachers did not give an answer or answered as I don't know.

Table 3: Associations for Chukar partridge word (categories and answers given according to categories and frequency of answers)

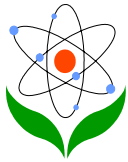
Categories	Answers included in each category and their frequency	Total frequency
<i>No answer/I don't know</i>	No answer or I don't know	45
<i>Bird</i>	Hunted for its delicious meat (103), beautiful voice (101), bird (88), good running (49), beautiful colour (43), endangered species (12)	396
<i>Emotional dimension</i>	Bland and compassionate (13)	13
<i>Environment</i>	Plains (19), mountains (17), cage (3)	39
<i>Song, folk-song</i>	Song and folk-song (108)	108

Evidence obtained from this study creates a basis for identifying the complexity of associations, opinions and primary concepts relating to endangered bird species and their protection. Evidence from our study is similar to the results of Torkar and Bajd (2006). Such complex associations definitely must be taken into account, especially while organizing protection activities and creating educational strategies by which a larger amount of people are targeted in order to protect endangered bird species and habitats. Legal arrangements and controls relating to hunting should be enforced more strictly in Turkey. Taking into account ovulating times and maturity time of babies while hunting and paying required attention to avoid exceeding limits during these hunting periods will contribute to the prevention of the extinction of these bird species.

Conclusions

Concepts and opinions of student science teachers concerning the protection of endangered bird species are analysed in the research. Analysis of data is as follows:

- The majority of the participant student science teachers thought that human intervention is required for the protection of bird species. While most of the student science teachers answered are alien to protection plans for endangered bird species, only a few answers emphasized the importance of education as a mechanism for protection of birds and other species.



- General opinions about the data indicated that student science teachers had some knowledge about the Chukar partridge and Hermit ibis birds. In other words, knowledge about bird species does not have a consistent distribution.

References

- Bilkent University (2009). Bilkent University web site. Retrieved May 13, 2009, from <http://www.ee.bilkent.edu.tr/>
- Flogaitis, E., & Agelidou, E. (2003). Kindergarten teachers' conceptions about nature and the environment. *Environmental Education Research*, 9(4) 462-468.
- Kiziroglu, I. (1989). *The Bird Species of Turkey*. Gazi/Ankara. OGM Basımevi.
- Kiziroglu, I. (1987). *Bird species-the generations of which are threatened by extinction in our country* (Turkey). I. Symposium on Problems of Kus Cenneti National Park in Bandirma Bird Lake, 3-4- Mai 1986, Bandirma. Ege Üniv. Fen Fak. Biyoloji Bölümü Ve Bandirma Rotary Klübü Yay. 1987 : 128-147.
- Koskinas, K. (2000). Environment and Upgrading of the Quality of Life, the Social Representations of the Environment. Athens, *Greek Letters Publications*.
- Randler, C., & Bogner, F. (2002). Comparing methods of instruction using bird species identification skills and indicators. *Journal of Biological Education*, 36, 181-188.
- Randler, C. (2003). Amsel, Drossel, und Star... Welche Vogelarten kennen Schülerinnen und Schüler? Praxis der Naturwissenschaften- *Biologie in der Schule*, 52, 44-45.
- Randler, C., & Bogner, F. (2006). Cognitive achievements in identification skills. *Journal of Biological Education*, 40(4), 161-165.
- Sato, M., & James, P. (1999). Nature and environment as perceived by university students and their supervisors. *International Journal of Environmental Education and Information*, 18(2), 165-172.
- Torkar, G., & Bajd, B. (2006). Trainee teachers' ideas endangered birds. *Journal of Biological Education*, 41(1), 5-8.
- Tucker, G. M., & Heath, M. F. (1994). *Birds in Europe: Their Conservation Status*. Cambridge, UK: Bird Life International.
- Yarar, M., & Magnin, G. (1997). *Important Bird Zones of Turkey*. Istanbul: Natural Life Protection Association.
- Young, J. A. (1987). Chukar partridge. *Range Lands*, 3(4), 166-168.