forests

MDPI

Article

A Survey of the Knowledge of Truffles among Polish Foresters and Implications for Environmental Education

Dorota Hilszczańska [1,*], Aleksandra Rosa-Gruszecka [1], Bogusław Kosel [2], Jakub Horak [3] and Marta Siebyła [4]

1 Department of Forest Ecology, Forest Research Institute, Braci Leśnej 3, Sękocin Stary, 05-090 Raszyn, Poland; a.rosa@ibles.waw.pl
2 Wydział Historyczno−Socjologiczny, Uniwersytet w Białymstoku, Plac Uniwersytecki 1, 15-420 Białystok, Poland; kosel.boguslaw@gmail.com
3 Department of Forest Protection and Entomology, Faculty of Forestry and Wood Sciences, Czech University of Life Sciences Prague, Kamýcká 1176, CZ-165 21 Prague, Czech Republic; jakub.sruby@gmail.com
4 Department of Forest Protection, Forest Research Institute, Braci Leśnej 3, Sękocin Stary, 05-090 Raszyn, Poland; m.siebyla@ibles.waw.pl
* Correspondence: d.hilszczanska@ibles.waw.pl; Tel.: +48-22-7150-502

Received: 20 March 2019; Accepted: 26 April 2019; Published: 27 April 2019

Abstract: While the use of truffles in Poland has a long tradition, for historical reasons this knowledge was almost lost. Currently, truffles and truffle orchards are again receiving public attention. For example, the Polish State Forests supported the establishment of truffle orchards by the Forestry Research Institute. In recent years, knowledge concerning these unique hypogeous fungi has been disseminated systematically through scientific and popular publications, films, and electronic media. This study investigates the awareness of economically and culinary valued truffle fungi (*Tuber* spp.) among more than 1400 Polish foresters. The results show that 70% of interviewees were familiar with historical and contemporary information about growing and using truffles in Poland. Based on respondents' age, education, type of work, and gender we attempted to identify whether these elements were associated with the state of knowledge about truffles. The results indicated that younger foresters were better informed about the presence of truffles in Poland and also about their use in the past in Polish cuisine. Environmental education was an important source of knowledge about truffle harvesting and the soils that are conducive to truffle development. Foresters who have provided forest ecology education and who are 36–65 years of age generally possessed better knowledge about truffles than other age cohorts. More than 30% of respondents expressed interest in educational courses to improve their knowledge of truffles. The results point to the need for forestry education concerning truffles and indicate the need for fostering sustainable agroforestry-centered initiatives disseminating this knowledge to the public.

Keywords: fungi; *Tuber* spp.; education; forestry; survey

1. Introduction

Poland has one of the largest forest areas (ca. 9.4 million ha) in Europe [1]. The majority of forests (about 80.8%) are administered by the State Forests National Forest Holding (the State Forests headed by the General Director). The General Directorate is in charge of 17 Regional Directorates, with altogether 431 forest districts divided into forest ranges [2].

Timber is the main product derived from Polish forests, and Poland's forests remain one of the best stocked in Europe. Non-wood forest products, such as forest fruits (mainly berries), mushrooms, and game animals have been gaining in importance. The Polish Central Statistical Office provides no statistics on the amount of fruits and mushrooms harvested from forests. Due to free public access to Poland's forests, everyone has a right to collect forest fruits and mushrooms without limit, with harvesting restricted only for protected species [3].

Social functions of forests are difficult to define and measure, which include recreation, tourism, education, and various traditional uses [4]. The State Forests place substantial efforts into raising public awareness of recreational and educational infrastructure available in forests, including: parks and arboreta (of which there are 17 in Poland), centres for ecological education (over 20), educational rooms (50), scenic viewpoints (318) and nature paths (over 150). The so-called green schools and Promotional Forest Complexes and Forest Education Centres, which are located in Forest Districts, run educational courses for primary school pupils (reaching over 815,000 people in 2015) and middle and high school students (about 450,000 people in 2015) [5]. At the national level, more than 9000 foresters in Poland provide public education about forests. A noticeable disadvantage of the current system is the fact that forest education for the majority of foresters is an additional responsibility on top of their other duties [6].

It is estimated that there are over 1000 species of edible mushrooms in Polish forests [7]. Their collection has a centuries-long tradition and an established place in Polish culture. Knowledge about mushrooms has traditionally been passed down from generation to generation. However, with the modernization of the country and an increase in the standard of living, knowledge and skill concerning the collection of edible mushroom species has been waning in recent years [8–10].

Knowledge among foresters about subterranean fungi such as truffles (*Tuber* spp.) was lost after the Second World War for some changes of social and cultural character as well as changes of forest management. Primary factors determining truffle forgetfulness were: (i) Changes in forest cover. After the Second World War, forests comprised only 20.8% of Polish territory. Unfavorable conditions for fruiting truffles included changes in species composition, age structure of stands, and changes of forest management. For example, undergrowth shading the forest floor was more common due to the cessation of grazing in forests. (ii) Changes in the structure of forest ownership and use. The disappearance of traditional types of forest use, such as cattle grazing and collection of brushwood. (iii) Changes at the societal level due to war and the great loss of Polish citizens, especially the loss of Polish aristocracy and intelligentsia, including foresters, or social groups with the most knowledge and practice regarding collection, use, and cultivation of truffles; emigration and migration of population from rural to urban areas. (iv) The communist regime promoted "pork chop and carp" as the food for the 'working class' rather than the traditional delicacies of Polish cuisine. Truffles as a luxury product for the nobility were not welcomed by new authorities [11,12].

As a type of mycorrhizal fungi, truffles need a host plant to develop, grow best in calcareous, mainly rendzic soils, and, because they grow up to 30 cm deep in the soil, they need to be found with the help of trained dogs or pigs.

Truffles currently are gaining attention in Poland, mainly due to research projects sponsored by the State Forests National Forest Holding. The projects have been conducted since 2007 by researchers of the Forest Research Institute. Due to this research, six truffle orchards were established (altogether covering almost 5 ha) (Table 1). At the oldest truffle orchard, fruiting bodies of the summer truffle (*Tuber aestivum* Vittad.) were found, eight years after orchard establishment [11,12]. Although establishing of truffle orchards is still in pioneer phase, such an activity is perceived as a new source of benefits in agroforestry. The possibility to grow and collect truffles is important for increasing rural economy and thereby the incentives for planting oak and hazel (main host-plant species). Truffle cultivation can contribute to a stable bioeconomy, both supporting the high biodiversity associated with *Quercus* spp. [13] and contributing to local economy of rural areas. Since truffle orchards may become

a new core of sustainable, high-diversity biotops worth protecting, the topic should be propagated, especially by foresters dealing with education who can based on results of the work cited below.

Table 1. Truffle orchards under care of the Forest Research Institute.

Location	Date of Establishment	Ownership	Area	Species of *Tuber*	Host-Plants	Remarks
1. Chełm (Chełm Hills)	2008	Polish State Forests Holding	0.4 ha	*T. aestivum* Vittad. (Poland)	*Quercus robur* L., *Corylus avellana* L.	1st *T. aestivum* fructification in September 2016
2. Kąpiołki (Kraków-Częstochowa Jurassic Upland)	2011	Private investors	0.4 ha	*T. aestivum* (Poland) *T. aestivum* (France) *T. melanosporum* Vittad. (France)	*Quercus robur*, *Corylus avellana*, *Pinus sylvestris* L.	
3. Michałów (Nida Basin)	2013 and 2019	Polish State Forests Holding	1.5 ha	*T. aestivum* (Poland)	*Quercus robur*, *Fagus sylvatica* L.	
4. Brzesko (Sandomierz Basin)	2017	Private investors	0.33 ha	*T. aestivum* (Poland)	*Quercus robur*	
5. Chmielnik (Nida Basin)	2017	Private investors	0.75 ha	*T. aestivum* (Poland)	*Quercus robur*	
6. Kumów (Chełm Hills)	2017 and 2018	Polish State Forests Holding	1.49 ha	*T. aestivum* (Poland)	*Quercus robur*	

The results of our truffle research are disseminated through publications [11,12,14], monographs [15], and in the film "Truffles in Poland," produced by M. Ogrodowczyk (https://www.youtube.com/watch?v=sGVQEkaWRjs). Given that environmental education is provided by foresters, we are of the opinion the subject of truffles should be part of the forestry education curriculum. To evaluate the state of knowledge about truffles among foresters, a survey was conducted with the aims of: (i) investigating the level of knowledge about truffles among foresters and (ii) indicating which aspects of knowledge about truffles need better communication.

2. Materials and Methods

The survey was carried out among foresters from 43 Forest Districts (10% of all districts in Poland). Each of 17 Regional Directorates was represented by one to six forest districts. The names of both the forest district and regional directorates are given in Table A1, Appendix A. In total, 2002 questionnaires were sent, canvassing 7.8% of all foresters employed in Poland, with from 20 to 74 individuals canvassed in each district depending on the number of forest district workers. The questionnaires were sent to the chosen Forest Districts via mail. The data was collected for two months and 1404 questionnaires were received back.

The questionnaire titled "What do you know about truffles?" included four questions to characterize the respondent (independent variables) and ten questions on aspects of truffle ecology, use, history in Poland, etc. (dependent variables) (Tables 2 and 3). The dependent variables were designed to investigate the foresters' knowledge, experience, and preferences regarding truffles. Characterization of independent data based on survey responses is showed in Table 4. The estimated time to complete the survey was 15 min.

Table 2. List of independent variables.

Variable	Variable Type	Values
A. Age	Ordinal	<25; 25–35; 36–45; 46–55; 56–65; >65
B. Gender	Dichotomous	female; male
C. Forester job	Nominal	in the forest; in the office; both
D. Work with environmental education	Dichotomous	yes; no

Table 3. List of dependent variables. The symbol "*" in questions 4, 7, 9 indicates that a "yes" answer allowed the respondent to provide an example and for question 7 that it was possible to give a different answer than the choices provided.

Question	Variable	Variable Type	Values
1. Do you collect mushrooms?	Preference	Nominal	Yes, often; Yes, rarely; No
2. Do truffles grow in Poland?	Knowledge	Nominal	Yes, they grow in the forest; Yes, they are grown in truffle-orchards; No; Not known
3. Have you ever found truffle?	Experience	Nominal	Yes, abroad; Yes, in Poland; not sure; No
4. Have you ever heard about hunting for truffles in Poland? *	Knowledge	Dichotomous	Yes; No
5. In the past truffles were eaten in Poland.	Knowledge	Nominal	Only by nobles; Used as fodder; Widely; Not known
6. Soils conducive to truffles.	Knowledge	Nominal	Calcareous; Podzols; Sandy; Not known
7. How are truffles collected? *	Knowledge	Nominal	With help of dogs or pigs; Following wild pigs rooting; Searching for plant indicators; Using other methods (please, indicate an example)
8. Which of the following fungi grow in your Forest District?	Experience	Nominal	1. *Gyromitra esculenta* (Pers.) Fr., 2. *Tuber aestivum* Vittad., 3. *T. excavatum* Vittad., 4. *Scleroderma citrinum* Pers.
9. Are truffle products present in Polish markets? *	Knowledge	Nominal	Yes; No; Not known

Statistical Analysis

Statistical analyses were done using R 3.0.2 software, (www.r-project.org). The majority of the data were selected with inner hierarchy. This means that the answers for particular questions were not independent from other questions. We chose one of the most appropriate modern statistical methods for selection of the hierarchy in thresholds and used a conditional inference tree method [16]. This method belongs to the family of recursive partitioning, which is based on maximally selected rank statistics. It was supported by using the package for R [17]. For our analyses, we used first order of discrimination in the case of significant response.

Table 4. Characterization of independent data based on survey responses, N/A—no answer.

Item	*n*	%
Age		
<25	43	3.1
25–35	361	25.7
36–45	305	21.7
46–55	361	25.7
56–65	304	21.7
>65	20	1.4
N/A	10	0.7
Gender		
Male	936	66.7
Female	392	27.9
N/A	76	5.4
Forester job		
In the forest	529	37.7
In the office	402	28.6
Both	408	29.1
N/A	65	4.6
Work with environmental education		
Yes	271	19.3
No	976	69.5
N/A	157	11.2

3. Results

Out of 2002 questionnaires, 1404 were obtained back. The response rates fell into two distinct groups. Questions to do with fungus identification were responded to by 660 foresters. Questions dealing with more general aspects of truffle occurrence, ecology, and use, received between 1170 and 1174 responses. Unless otherwise stated, there was no significant effect of respondent age, gender, education, or job position on the response received.

The survey revealed that the majority of respondents (70.7%) know that truffle fungi grow in Polish forests. However, only a small number of respondents (15.4%) were aware that truffles can be grown in orchards. Only a small number of respondents indicated that they found truffles abroad or in Poland (0.6% and 2.8%, respectively). Answering the 4th question (Table 5), only 471 respondents indicated a source of information about truffles. The main source of information was TV and only 11 respondents indicated scientific publication (Figure 1).

A large portion of respondents (about 62%) were aware of the historical use of truffles. However, most respondents were of the opinion that truffles were not commonly eaten in the past (only 4.3% of respondents thought they were once a common food item), an opinion especially common among those younger than 36 years old. More than one third of foresters knew the type of soils conducive to truffle growth. Only about 5% indicated that truffles were present on non-calcareous soil. A great number of respondents (1217) knew that searching for truffles is provided with help of dog or swine (Table 5, Figure 2). More than 200 respondents were familiar with other methods of truffle hunting (Figure 2). Out of the four species of fungi (Tables 3 and 5), *G. esculenta* (Pers.) Fr. was the one most respondents were able to identify. Men more often indicated that truffles grew in their forest district. About 28 per cent of respondents were familiar with truffle products, especially people younger than 46 years of age.

Table 5. Respondents' answers with comments based on statistical analysis. The symbol "*"indicates that the respondent were asked to provide an example.

Question	Answers to Choose	Result	Remark
1. Do you collect mushrooms?	Yes, often; Yes, rarely; No	30.5% of foresters answered "yes, often", 58.8% said "yes, rarely" and 10.3% said "no".	
2. Do truffles grow in Poland?	Yes, they grow in the forest; Yes, they are grown in truffle-orchards; No; Not known	The first answer was chosen by 70.7% of respondents.	Those who disagreed were most often above 56 years of age (Stat. = 26.37; $p < 0.001$).
		Only 15.4% of respondents agreed with the second answer.	Respondents above 36 years of age more often did not agree with the second statement (Stat. = 8.98; $p = 0.011$).
		Only 2.5% of respondents said "no" with opinion.	Respondents above 56 years of age were more likely to give the answer (Stat. = 9.73; $p < 0.001$).
		18.9% of respondents did not know if truffles grow in Poland.	Respondents above 36 years of age were more likely to choose the answer (Stat. = 15.87; $p < 0.001$).
		Only 10.0% of responders said that truffles grow, both in forest and orchard.	Respondents above 36 years of age more often gave a negative answer, i.e., they did not agree that statement (Stat. = 6.55; $p = 0.041$).
3. Have you ever found truffle?	Yes, abroad; Yes, in Poland; not sure; No	Only 0.6% per cent of respondents gave a positive answer.	
		2.8% of respondents indicated they had found truffles in Poland.	
		8.2% of the respondents was not sure.	
		95% of respondents said "no".	Most of those disagreeing were men (Stat. = 9.93; $p = 0.006$).
4. Have you ever heard about hunting for truffles in Poland? *	Yes (please indicate a source); No	"Yes" said 36.2% of respondents and the source of knowledge are indicated in Figure 1.	Foresters responsible for environmental education were statistically more likely to give a positive answer to this question (Stat. = 19.10; $p < 0.001$).

Table 5. *Cont.*

Question	Answers to Choose	Result	Remark
5. In the past truffles were eaten in Poland.	Only by nobles; Used as fodder; Commonly; Not known	The first statement was chosen by 61.7% of respondents.	
		Only 6.6% of respondents agreed with the opinion.	Respondents above 36 years of age more often were of different opinion (Stat. = 14.31; $p < 0.001$).
		"Commonly" said 4.3% of respondents.	Respondents above 36 years of age more often were of different opinion (Stat. = 14.31; $p < 0.001$).
		27.4% of respondents did not know.	
6. Soils conducive to truffles.	Calcareous; Podzols; Sandy; Not known	"Calcareous" said 33.7% of respondents.	Foresters responsible for environmental education were more likely to give the answer (Stat. = 16.31; $p < 0.001$).
		"Podzols" said 5.1% of respondents.	Foresters who do not deal with environmental education more often chose the answer (Stat. = 6.75; $p = 0.037$).
		"Sandy" said 5.2% of respondents.	
7. How are truffles collected? *	With help of dogs or pigs; Following wild pigs rooting; Searching for plant indicators; Using other methods (please, indicate an example)	Results are showed in Figure 2.	
8. Which of the following fungi grow in your Forest District?	1. *Gyromitra esculenta*, 2. *T. aestivum*, 3. *T. excavatum*, 4. *Scleroderma citrinum*	The first species was selected correctly in 39.1% of cases.	Men were more often correct at this task than women (Stat. = 6.27; $p = 0.048$).
		The second species was correctly identified only by 9.2% respondents.	
		The third species was correctly chosen by 5.9% of respondents.	
		The forth species was correctly identified by 34.1% of respondents.	
9. Are truffle products present in Polish markets? *	Yes; No; Not known	Only 28.45% of respondents said "yes".	Respondents above 46 years of age more often answered they did not know (Stat. = 24.83; $p < 0.001$).

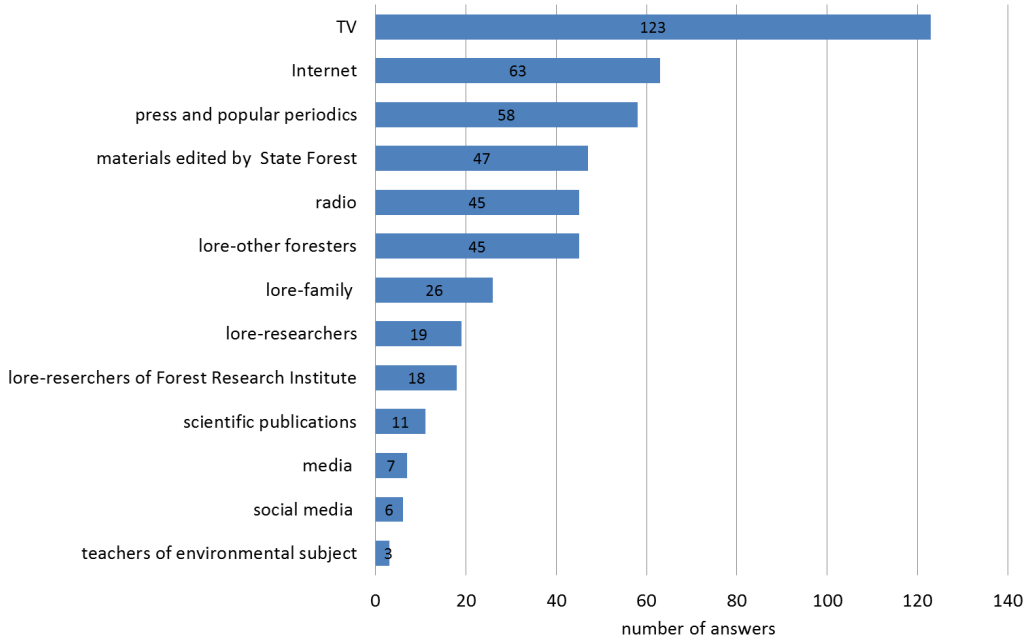

Figure 1. Sources of information about truffles in Poland.

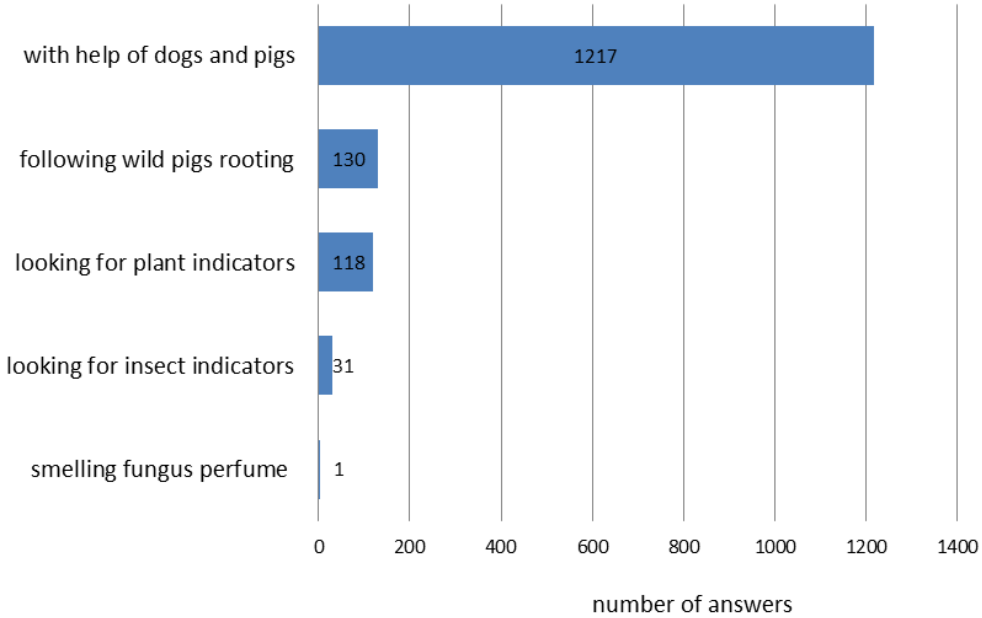

Figure 2. Methods of truffles collection known to respondents.

4. Discussion

The high cultural importance of fungi is very characteristic of northern Slavic societies. In Poland, mushrooms are widely collected and consumed by the general public. Mushrooms are also widely known, recognized, talked about, and even frequently depicted in children's illustrations [18]. The scene of mushroom collection is presented in the Polish national epic entitled "Pan Tadeusz" as a noble occupation, having a strong social and culture-creating value [19].

Truffles, as fungi of special value and taste, were known and eaten in Poland at least since 1661 [11,12]. However, after the Second World War, interest in truffles decreased due to changes in social and cultural character as well as changes made in forest management. In the late 1940s, despite the rich body of historical records on truffles, even their presence in Poland was questioned [20]. In 2007, research on truffles conducted in the Nida Basin revealed the presence in Poland of *T. aestivum*

and other truffle species [21]. Since then, efforts have been made to disseminate knowledge about truffles (*Tuber* spp.) by publications, a movie, and book [11,12,14,15,21–26], and popular programs. The first Polish truffle orchards were established using seedlings inoculated from native inoculum. In the oldest orchard, which was established in 2008, fruiting bodies of *T. aestivum* were first observed in 2016 [12]. The research and popularization of truffles was strongly supported by the forestry sector, which help to drive research and to promote the subject within forestry education [23–26].

The survey reported here, carried out among foresters in Poland, revealed that people older than 56 years of age more often did not know about the presence of truffles in Poland. Such a result is surprising given that respondents indicated their main source of information about truffles were TV and Internet (Figure 1). On the other hand, this group of respondents might be less engaged with the Internet, the second leading source of information on truffles. Kalle and Sõukand [27] found that people, even in societies where social media has become prevalent, prefer that knowledge be given personally rather than in books. This is particularly true for mushrooms due to the toxicity of some species. However, field guides are still influential, in that they tend to cause unification of mushroom names throughout the country [10].

The survey showed that women were less likely to have found truffles than men. It might indicate sociological aspects of forest use: although knowledge about mushrooms is held by both sexes, men are slightly more involved in the practice of gathering. This is in contrast to plant gathering, which in Poland has been performed mainly by women and children [10]. Mushroom collection is more similar to hunting, usually a male domain, than collecting berries or herbs, as the appearance of fungal fruiting bodies is temporal [10]. A strong element of chance is thus introduced, making mushroom gathering more exciting and due to the fact that it has a highly competitive character, male mushroom pickers do not want to confirm their "failure".

Men more often indicated that truffles grew in their forest district. Some of the correct species identification may have resulted from people recognizing the truffle name and correctly guessing which picture it matched. We hypothesize that male foresters may have a higher truffle identification rate than females because of the springtime occurrence of these fungi when field work (planting, thinning etc.) is being carried out mainly by male foresters.

More than one third of foresters knew the type of soils conducive to truffle growth. Foresters responsible for environmental education were more likely to give the correct answer. However, about 5% of foresters indicated that truffles were present on non-calcareous soil. This result may indicate that, among foresters who knew that truffles grow in Polish forests, a minority possessed knowledge of the ecological requirements for truffle growth as for the type of soils conducive to truffle growth.

Popularity of truffle products, especially among people younger than 46 years of age seems to confirm the idea that young people are more prone to follow the news and have a more consumer-oriented attitude and contemporary lifestyle that could include greater knowledge and use of gourmet food [28].

Based on the results of our survey we think a forest education program aimed at raising awareness of truffles should be divided into stages addressed to various groups of recipients (taking into account age, education, and gender). Firstly, it should include foresters working in areas where truffles grow naturally since in the future they would be dealing with nature conservation in the terrain of truffle ecotourism. Secondly, educators and employees of forest education centres should be knowledgeable on the subject of truffles. For this purpose, appropriate guides containing the most important data on truffles growing in Poland, both in the natural environment and in truffle orchards are necessary.

5. Conclusions

The results revealed that the level of knowledge among foresters still is far from satisfactory. To achieve greater awareness on this topic we think more emphasis should be given to popular science articles in the Polish language dealing with, for example, how to grow truffles in orchards, hunt for truffles in forests, and how to use them in cuisine (e.g., how to preserve and cook truffles). Truffles

could also be promoted as an eco-attraction, and to help increase knowledge of the important roles of fungi in forest ecosystems. Considering that TV and the Internet were the main sources of knowledge about truffles, it might be reasonable to develop educational activities in these media, for example by creating a special website <truflapolska.pl> or Facebook page, to make material more accessible on this subject.

Author Contributions: D.H., A.R.-G., B.K. and M.S. generated the data. All authors analyzed and discussed the data. Statistical analysis: J.H. The general conception: D.H. and A.R.-G. The manuscript was written by D.H. and B.K.

Funding: The research was performed within the project financed by the State Forests National Forest Holding [grant No. OR-271.3.5.2017].

Acknowledgments: All reviewers are acknowledged for their valuable comments and suggestions, which greatly improved the paper.

Conflicts of Interest: The authors declare no conflict of interest.

Appendix A

Table A1. Data codification for statistical analysis.

No	Question Description	Answer Code
1.	Questionnaire number	From 1 to 1404
2.	Regional Directorate of State Forests	1—Białystok, 2—Gdańsk, 3—Katowice, 4—Kraków, 5—Krosno, 6—Lublin, 7—Łódź, 8—Olsztyn, 9—Piła, 10—Poznań, 11—Radom, 12—Szczecin, 13—Szczecinek, 14—Toruń, 15—Warszawa, 16—Wrocław, 17—Zielona Góra.
3.	Forest District	1—Białowieża, 2—Hajnówka, 3—Nurzec, 4—Suwałki, 5—Elbląg, 6—Bielsko, 7—Katowice, 8—Olkusz, 9—Ustroń, 10—Złoty Potok, 11—Brzesko, 12—Krzeszowice, 13—Limanowa, 14—Miechów, 15—Niepołomice, 16—Kolbuszowa, 17—Chełm, 18—Lubartów, 19—Mircze, 20—Tomaszów, 21—Zwierzyniec, 22—Kutno, 23—Przedbórz, 24—Radomsko, 25—Olsztyn, 26—Susz, 27—Zdrojowa Góra, 28—Krotoszyn, 29—Chmielnik, 30—Jędrzejów, 31—Łagów, 32—Pińczów, 33—Zwoleń, 34—Chojna, 35—Gryfino, 36—Karnieszewice, 37—Polanów, 38—Brodnica, 39—Celestynów, 40—Chojnów, 41—Jabłonna, 42—Bardo Śląskie, 43—Nowa Sól.
4.	Age range	0—lack of information (no answer); 1—<25 y/o, 2—25–35 y/o, 3—36–45 y/o, 4—46–55 y/o, 5—56–65 y/o, 6—>65 y/o.
5.	Gender	0—lack of information (no answer), 1—female, 2—male.
6.	Type of work	0—lack of information (no answer); 1—fieldwork, 2—office work, 3—field- and office work.
7.	Is the respondent engaged in nature and forest education?	0—lack of information (no answer); 1—positive, 2—negative.
8.	Does the respondent collect mushrooms?	0—lack of information (no answer); 1—yes, often, 2—yes, sometimes, 3—negative.

Table A1. *Cont.*

No	Question Description	Answer Code
9.	Opinion: "Truffles do not occur in Poland".	0—negative; 1—positive (they do not occur).
10.	Opinion: "Truffles occur in Poland in the forest"	0—negative; 1—positive.
11.	Opinion: "Truffles occur in Poland in truffle orchards".	0—negative; 1—positive.
12.	Opinion: "The respondent does not know if truffles occur in Poland".	0—negative; 1—positive (the respondent is not sure about truffles' occurrence).
13.	Opinion: "Truffles in Poland occur in the forest and in truffle orchards, both of them"	0—any, 1—both selected
14.	Opinion: "The respondent found a truffle abroad".	0—negative, 1—positive.
15.	Opinion: "The respondent found a truffle in Poland".	0—negative, 1—positive.
16.	Opinion: "The respondent does not know if he/she found a truffle in Poland".	0—negative; 1—positive (the respondent is unsure about his/her finding).
17.	Opinion: "The respondent did not find a truffle in Poland".	0—negative; 1—positive (respondent did not find).
18.	Opinion: "The respondent heard about truffle hunting/collecting in Poland"	0—negative, 1—positive.
19.	In Poland, in the past truffles were eaten at by nobles	0—negative, 1—positive.
20.	In Poland, in the past truffles were eaten commonly.	0—negative, 1—positive.
21.	In Poland, in the past truffles were used as animal feed.	0—negative, 1—positive.
22.	Truffles occurs in calcareous soils	0—negative, 1—positive.
23.	Truffles occur in podzol soils	0—negative, 1—positive.
24.	Truffles occur in sandy soils	0—negative, 1—positive.
25.	Occurrence of species presented on pictures	0—Any picture picked, 1—At least one picture picked.
26.	Occurrence of *Gyromitra esculenta*	0—negative, 1—positive.
27.	Occurrence of *Tuber aestivum*	0—negative, 1—positive.
28.	Occurrence of *Tuber excavatum*	0—negative, 1—positive.
29.	Occurrence of *Scleroderma citrinum*	0—negative, 1—positive.
30.	Products with truffles available in Poland	0—respondent did not know of any product, 1—respondent heard about product with truffles in Poland.

References

1. FAO. *Global Forest Resources Assessment 2000*; FAO: Rome, Italy, 2010.
2. *The State Forests in Figures*; Directorate-General of the State Forests: Warsaw, Poland, 2017.
3. Kruk, H.; Kornatowska, B. Sustainable forest management in Poland—Theory and practice. *Folia For. Pol.* **2014**, *56*, 45–55. [CrossRef]
4. Zawadzka, D. *Ochrona przyrody w Lasach Państwowych*; CILP: Warsaw, Poland, 2002.
5. Chrzanowski, T. Model edukacji leśnej społeczeństwa w Lasach Państwowych. Available online: http://cepl.sggw.pl/konferencja/wzels/wzels15/abstrakty/Model_edukacji_lesnej_spoleczenstwa.htm (accessed on 25 April 2019).
6. Greczuk, M.; Kośmider, P. Edukacja przyrodniczo-leśna: Odpowiedzialność leśników oraz nauczycieli wobec kształtowania postaw uczniów szkół podstawowych i średnich. *Studia i Materiały Centrum Edukacji Przyrodniczo-Leśne* **2013**, *15*, 34.
7. Grzywacz, A. *Las tętniący życiem*; Lasy Państwowe: Warsaw, Poland, 2010; p. 38.
8. Chwaluk, P.; Parnicki, F. Wiedza studentów turystyki i rekreacji Akademii Wychowania Fizycznego na temat grzybów dziko rosnących. *Przegląd Lekarski* **2011**, *8*, 436–439.
9. Chwaluk, P.; Cisoń-Apanasewicz, U.; Kiełtyka, A.; Parnicki, F.; Potok, H. Czynniki warunkujące wiedzę studentów o grzybach dziko rosnących. *Przegląd Lekarski* **2012**, *8*, 455–458.
10. Łuczaj, Ł.; Nieroda, Z. Collecting and learning to identify edible fungi in southeastern Poland: Age and gender differences. *Ecol. Food Nutr.* **2011**, *50*, 319–336. [CrossRef] [PubMed]
11. Rosa-Gruszecka, A.; Hilszczańska, D.; Gil, W.; Kosel, B. Truffle renaissance in Poland—history, present and prospects. *J. Ethnobiol. Ethnomed.* **2017**, *13*, 36. [CrossRef] [PubMed]
12. Rosa-Gruszecka, A.; Hilszczańska, D.; Gil, W.; Kosel, B. Historia i perspektywy użytkowania i badań trufli w Polsce. *Sylwan* **2017**, *161*, 320–327.
13. Gärdenfors, U. Eken-utnyttjad av tusentals organismer. *Ekfrämjandet* **1994**, *50*, 77–82.
14. Rosa-Gruszecka, A.; Gange, A.C.; Harvey, D.J.; Jaworski, T.; Hilszczański, J.; Plewa, R.; Konwerski, S.; Hilszczańska, D. Insect-truffle interactions—potential threats to emerging industries? *Fungal Ecol.* **2017**, *25*, 59–63. [CrossRef]
15. Hilszczańska, D.; Szmidla, H.; Horak, J.; Rosa-Gruszecka, A. Ectomycorrhizal communities in a *Tuber aestivum* Vittad. Orchard in Poland. *Open Life Sci.* **2016**, *11*, 348–357. [CrossRef]
16. Hothorn, T.; Hornik, K.; Zeileis, A. Unbiased recursive partitioning: A conditional inference framework. *J. Comput. Graph. Stat.* **2006**, *15*, 651–674. [CrossRef]
17. Hothorn, T.; Hornik, K.; Zeileis, A. Party: A Laboratory for Recursive Part(y)itioning. Available online: ftp.auckland.ac.nz/software/CRAN/doc/vignettes/party/party.pdf (accessed on 26 April 2019).
18. Łuczaj, Ł. Primroses versus spruces: Cultural differences between flora depicted in British and Polish children's books. *Ethnobot. Res. Appl.* **2009**, *7*, 115–121. [CrossRef]
19. Karslen, P. *Biografia Prawdziwka*; Znak Horyzont: Warsaw, Poland, 2018.
20. Orłoś, H. Czy trufle prawdziwie rosną w Polsce? *Czasopismo ogrodnicze, Organ Związku Rewizyjnego Spółdzielni RP I Centrali Gospodarczej Spółdzielni Ogrodniczych RP* **1947**, *10*, 14.
21. Hilszczańska, D.; Sierota, Z.; Palenzona, M. New *Tuber* species found in Poland. *Mycorrhiza* **2008**, *18*, 223–226. [CrossRef] [PubMed]
22. Gajos, M.; Hilszczańska, D. Research on truffles: Scientific journals analysis. *Sci. Res. Essays* **2013**, *8*, 1837–1847.
23. Hilszczańska, D.; Rosa-Gruszecka, A.; Szmidla, H. Characteristic of *Tuber* spp. localities in natural stands with emphasis on plant species composition. *Acta Mycol.* **2014**, *49*, 267–277. [CrossRef]
24. Hilszczańska, D.; Rosa-Gruszecka, A.; Gawryś, R.; Horak, J. The effect of soil properties and vegetation characteristic in determining the frequency of fruiting bodies of the Burgundy truffle in Southern Poland. *Ecoscience* **2019**, *26*, 113–122. [CrossRef]
25. Hilszczańska, D.; Szmidla, H.; Sikora, K.; Rosa-Gruszecka, A. Soil properties conducive to *Tuber aestivum* Vitt. fruiting bodies formation. *Pol. J. Environ. Stud.* **2019**, *28*, 1713–1718. [CrossRef]
26. Hilszczańska, D. *Polskie Trufle. Skarb Odzyskany. O hodowli i Kulinariach Podziemnego Przysmaku*; CILP: Warsaw, Poland, 2016.

27. Kalle, R.; Sõukand, R. Herbal landscape: The perception of landscape as a source of medicinal plants. *Trames* **2010**, *14*, 207–226.
28. Smith, A. *The Oxford Encyclopedia of Food and Drink in America*; Oxford University Press: Cary, NC, USA, 2013; p. 715.