

## Acceptance of Selected Returning Birds and Mammals through the Eyes of Secondary School Students

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*"It never troubles the wolf how many the sheep may be..." — Maro Publius Vergilius*

### Abstract

The presented study is based on hypothesis that people may have misconceptions about the consequences of the return of some higher vertebrate species to the Czech countryside. It is assumed that rather than focusing on general facts, they fall victims to the increasingly publicised spots, pointing out, for example, the fear, concerns and damage caused to farmers. The dynamic growth in the population of certain species and the infectious diseases that some species may carry are also of concern. Therefore, human acceptance of these species can, in general, prove complicated.

The target group to confirm or deny the hypothesis was formed by grammar school students, who can continue to focus on nature preservation and vertebrate returns to the wild during their academic advancements, and secondary forestry school students, who are expected to provide professional care to these species in the future. It is the attitude of students and young people that can influence the acceptance of these species by the general public, currently influenced by politicians and publicists. The authors of the study believe that, alongside the general public, specialists with insight into the field should play a key role in the decision-making process regarding the future of these animals.

A questionnaire was designed and circulated to obtain the required data for the study. To ensure clarity, only three Likert-scale items were featured in the questionnaire, namely: positive, neutral and negative approach/acceptance. The results have confirmed that further details would rather complicate the evaluation process. Six secondary forestry schools were selected across the regions of the Czech Republic, i.e. over half of the vocational training facilities focused on forestry in the Czech Republic. For comparison, two grammar schools were added to complement the focus group: One from the Central Bohemia Region and one from the Ústí Region. In total, 373 students were addressed with 222 respondents from secondary forestry schools and 151 respondents from grammar schools.

From the results obtained via the questionnaires, it is evident that the presence of some animal species in the wild is generally viewed positively by students of both secondary forestry and grammar schools, although students of secondary forestry schools are more cautious in their decision making and more often tend to present a neutral attitude.

While the presented results do not fully confirm the above hypothesis, they point out within even more significant context that whether any current and/or future reintroduction

activities are to be successful and the acceptance of some endangered species is to be perceived non-confrontationally, all attempts must, unconditionally, be supported by consistent environmental awareness promoted by schools.

## Keywords

Environmental Education; Returning Species; Large Beasts; Nature Conservation

## Abstrakt

Předložená studie vychází z hypotézy, že lidé mohou mít o důsledcích návratu některých druhů vyšších obratlovců zpět do české přírody zkreslené představu. Předpokládá se, že jsou ovlivňováni více než obecnými skutečnostmi, stále častějšími medializovanými spoty, poukazujícími např. na strach, obavy a škody způsobené farmářům. Obavy budí i dynamický růst početnosti populací některých druhů a nakažlivé nemoci, které některé druhy mohou přenášet. Přijímání těchto živočišných druhů lidmi proto může být obecně komplikované.

Cílovou skupinou pro ověřování této teorie byli zvoleni žáci gymnázií, kteří se při dalším studiu mohou dále věnovat problematice ochrany přírody a návratům obratlovců a studenti ze středních lesnických škol, u kterých se myslivecká péče o tyto druhy v budoucnu očekává. Právě postoje studentů a mladých lidí jsou obecně velmi důležité pro přijetí těchto zmiňovaných druhů, protože nejen politiky a publicisty ovlivněná nejširší veřejnost, ale hlavně v oboru vzdělání lidé by se měli podílet na rozhodování o budoucnosti těchto zvířat.

Pro tuto studii byla vybrána metoda dotazníkového šetření, ve kterém kvůli celkovému zjednodušení byly uvedeny pouze tři možnosti vnímání na Likertově škále, a to buď pozitivní, negativní, anebo neutrální. Z výsledku je patrné, že jemnější členění dotazu by situaci spíše znejasnilo. Napříč kraji České republiky bylo vybráno 6 středních lesnických škol, tedy nadpoloviční většina takto orientovaných v České republice a pro srovnání také 2 gymnázia. Jedno ze středočeského a druhé z Ústeckého kraje. Celkem tedy bylo osloveno 373 žáků. Respondentů středních lesnických škol bylo 222 a respondentů gymnázií 151.

Z výsledků získaných z dotazníků je patrné, že přítomnost jednotlivých živočišných druhů je studenty středních lesnických škol i gymnázií obecně vnímána převážně pozitivně i když studenti středních lesnických škol jsou v úsudku více opatrní a častěji zaujímají neutrální postoj.

Tyto výsledky sice zcela nepotvrzují výše uvedenou hypotézu, ale v mnohém významnějším kontextu poukazují na to, že pokud mají být současné i budoucí reintrodukční aktivity úspěšné a přijímání některých ohrožených druhů nekonfrontačně vnímané, musí být rozhodně podpořeny důslednou environmentální výchovou už ve školách.

## Klíčová slova

environmentální výchova; vracející se druhy; velké šelmy; ochrana přírody

## Introduction

The return of several animal species, which started after the year 1950 and has already continued approximately 70 years, means, for the Czech, Moravian and Silesian public, the need to come to terms with the presence of animals that were previously completely absent in the wild or scarce. More consistent protection of animals is promoted within the European Union countries through European directives, primarily the Habitats Directive 92/43 / EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora, which, when strictly applied, leads to the growth of endangered animal populations. These steps have resulted in the spread of some mammals and birds to the area from which they were previously driven out by mankind.

All kinds of animals can provoke both positive and negative emotions, such as fear and dislike (Rádlová et al., 2018). From an evolutionary perspective, this ability can be considered a tool for survival in an ever-changing environment. For example, pleasure or anger is an emotional response that can result in positive acceptance, while fear leads to aversive behaviour (Küller, 2004). In particular, the fear of top predators is usually associated with harm and pain inflicted, whereas the fear of low-predation animals often stems from disgust and revulsion or concern with infectious diseases spread by these animals (Johansson, 2012). One Norwegian study also shows that people with higher education and people who evince an interest in outdoor activities, such as small game hunting and hiking, generally claim to be less afraid of predators than respondents with lower education and without an interest in outdoor activities (Røskaft et al., 2003). For example, the Küller's emotional model of human-environment interaction, based on the 'basic emotional process' and the theory that emotional processes are influenced by different levels of evaluation of stimuli in an external natural and social environment (Garling & Evans, 1992), was formed based on these reactions.

A fear of the unknown, of the new and, perhaps, misrepresented is a natural part of the human mind. Although, such fears can develop into specific disorders, in this case, into a form of zoophobia (Praško et al., 2008). Specific zoophobias can, naturally, be of a genetic origin or, more precisely, there is a kind of a developed mechanism that prepares us for certain forms of fear, as referenced in research by Hoehl et al., (2017). However, it is more common for zoophobias to be triggered by a particular situation, a traumatic experience, either of a personal or mediated nature. The perception of returning species is usually negative in the eyes of the general public, and the negation rate is related both to the fear and to the real or putative damage that the animals cause. An entrenched prejudice also plays a fundamentally unfavourable role. Looking ahead, it is essential that these re-established animal species are accepted by primary school pupils, followed by students who can significantly promote the presence of these animals in the countryside thanks to their studied field of expertise and future jobs.

## Objectives

This work's objective was to verify, based on a questionnaire survey the attitude of forestry and grammar school students to the increasing presence of selected vertebrate species in the Czech Republic's countryside and thus to determine the level of acceptance of these species by people who are expected to be professionally involved in the issues.

## Methodology

Within the framework of a Žmolil's (2019) diploma thesis focused on the protection of the Eurasian eagle-owl, data related to the perception of re-established wildlife by students of secondary forestry schools and grammar schools were continuously collected.

The questionnaires targeted students of two grammar schools: a grammar school in the Central Bohemia Region, from which 90 replies were collected, and a grammar school in the Ústí nad Labem Region with 61 answers, alongside students of secondary forestry schools: namely a forestry school in the Liberec Region with 16 questionnaires, the Hradec Králové Region with 61 questionnaires, the Karlovy Vary Region with 34 questionnaires, the South Moravia Region with 31 questionnaires, complemented by 38 questionnaires from the Ústí Region and 38 questionnaires from the Central Bohemia Region. The questionnaires were circulated based on arrangements with school headmasters and teachers. Data was collected in 2019. A total of 373 students were addressed irrespective of gender and age to ensure simplicity. However, in the follow-up studies these aspects were taken into consideration and differentiated. There were 222 respondents from secondary forestry schools and 151 respondents from grammar schools. To ensure clarity, only three Likert-scale items were featured in the questionnaire, namely: positive, neutral and negative approach/acceptance. Subsequent processing of the data collected provided the basis for the presented work.

Schools of Forestry																
	Eagle Owl	%	Wolf	%	Wild Boar	%	Lynx	%	Raven	%	Elk	%	Otter	%	Bear	%
positive	130	58.56	81	36.49	73	32.88	116	52.25	59	26.58	100	45.05	115	51.80	72	32.43
neutral	73	32.88	63	28.38	93	41.89	74	33.33	105	47.30	86	38.74	71	31.98	81	36.49
negative	19	8.56	78	35.14	56	25.23	32	14.41	58	26.13	36	16.22	36	16.22	69	31.08
total	222		222		222		222		222		222		222		222	

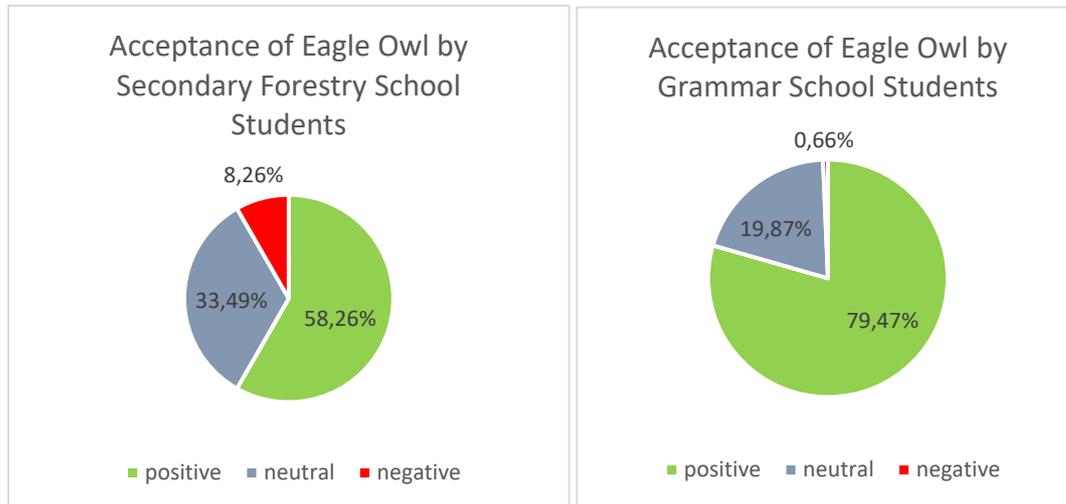
  

Grammar School																
	Eagle Owl	%	Wolf	%	Wild Boar	%	Lynx	%	Raven	%	Elk	%	Otter	%	Bear	%
positive	120	79.47	91	60.26	51	33.77	105	69.54	46	30.46	86	56.95	120	79.47	64	42.38
neutral	30	19.87	43	28.48	59	39.07	39	25.83	88	58.28	58	38.41	24	15.89	54	35.76
negative	1	0.66	17	11.26	41	27.15	7	4.64	17	11.26	7	4.64	7	4.64	33	21.85
total	151		151		151		151		151		151		151		151	

**Chart 1** Re-established Wildlife and Its Acceptance by Students

### Eagle Owl (*Bubo Bubo*).

The Eagle Owl was practically exterminated in the territory of the Czech Republic between 1906 and the date of establishing the protection of the Eagle Owl enjoyed at the beginning of the 1930s. According to the Atlas of Nesting Occurrence, there are approximately 1,000 nesting pairs nowadays (Šťastný et al., 2009).

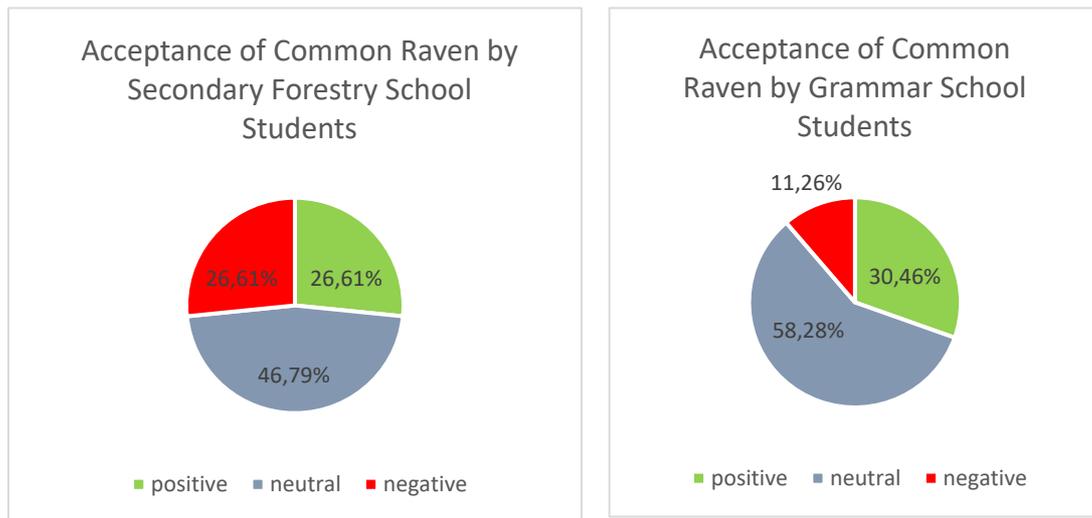


**Chart 1** Acceptance of Eagle Owl

The difference between the groups of respondents is rather big. The negative attitude is practically absent in grammar school students, while 8.3% of the questioned forestry school students confirmed a negative attitude towards the Eagle Owl re-establishment in the wild. On the other hand, the positive attitude ratio proved to be the opposite, with the difference close to 20%.

### Common Raven (*Corvus corax*).

The last documented nesting of the Common Raven in the Czech lands is dated to the year 1852 as referenced by Andreska (2017). In 1948, the Common Raven became the subject of legal protection in the whole territory of former Czechoslovakia under Act No. 225/1947, Coll. and began to spread from the east. In 1968, after 116 years, the Common Raven nested down again in the Czech Republic (Andreska, 2017). Nowadays, there are more than 1,200 nesting pairs in the Czech Republic (Šťastný et al., 2009).



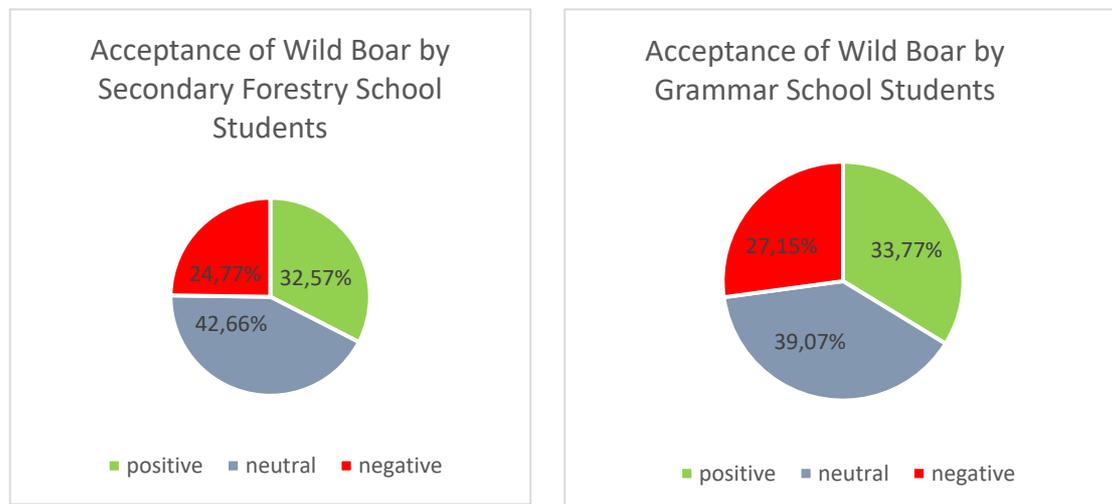
**Chart 3** Acceptance of Common Raven

The respondents were unsure about the presence of the Common Raven in the countryside of the Czech Republic. In the case of the forestry students, the negative rating was given by more than a quarter of the respondents, while the grammar school students reported a negative attitude in more than 10 per cent of cases. It is important to note that there is also a neutral view, which was indicated by almost one half of the forest school students and 60 per cent of the grammar school students.

### Wild Boar (*Sus scrofa*).

In the Czech Republic, the breeding of wild boar in freedom was prohibited by the hunting patent passed by Joseph II and observed by all subsequent applicable legislation. The unification of the Hunting Act, i.e. the effort to reconcile the hunting standards applicable in the Czech and Slovak parts of Czechoslovakia broke this ban in 1947 and the free breeding of Wild Boar was no longer restricted by Act 225/1947 Coll. As a result, the species spread very quickly and

the presence of Wild Boar caused considerable worries. Hikers felt threatened when walking around forests, especially at the beginning of the re-occurrence of the Wild Boar population. Nowadays, its wild population has grown significantly, to the point where over 200,000 individuals may be hunted down per year. Nevertheless, the fear of Wild Boar encounters persists. Difficulties are also caused by the Wild Boar massive presence near roads, as well as gardens that lie close to municipality forests.

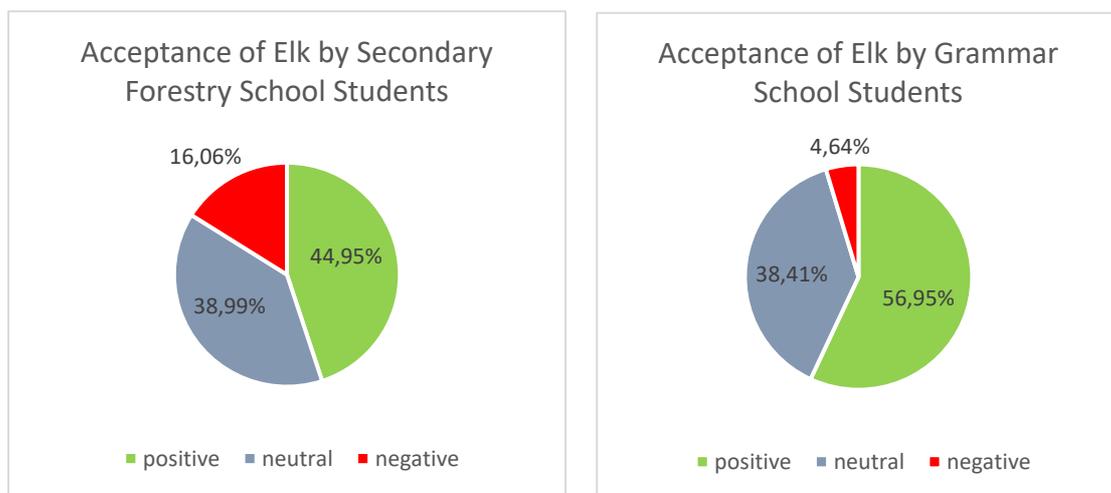


**Chart 4** Acceptance of Wild Boar

The difference in the Wild Boar perception by both groups of students is only minimal and the results could be considerate similar. The explanation seems to be a difficult one and would probably require additional questions and their further analysis. The Wild Boar is classified as a top predator by forestry students due to its predation of small vertebrates, while the fear of its presence and alarming news about the African swine fever virus may have influenced the opinion of grammar school students.

## Elk (*Alces alces*)

According to Andreska J. & Andreska D. (2015), hunting, alongside the changes to the landscape caused by its agricultural colonisation, were among the main reasons for the Elks' disappearance from Central Europe probably during the reign of the Přemyslids, but certainly under the Luxembourg dynasty. The spontaneous return of the Elk to the Czech lands occurred in the second half of the 20<sup>th</sup> century. However, it was prompted by its legal protection in Poland. The first Elk appeared in the Czech Republic in 1957; the first reproduction was documented in 1974. (Andreska, 2017). Now, there are between 10 to 20 individuals recorded, living in surroundings of the Lipno lake, especially around its southern bank. Collisions with vehicles on roads and railways are believed to be the main cause of the population growth stagnation (Andreska J., Andreska D., 2015).

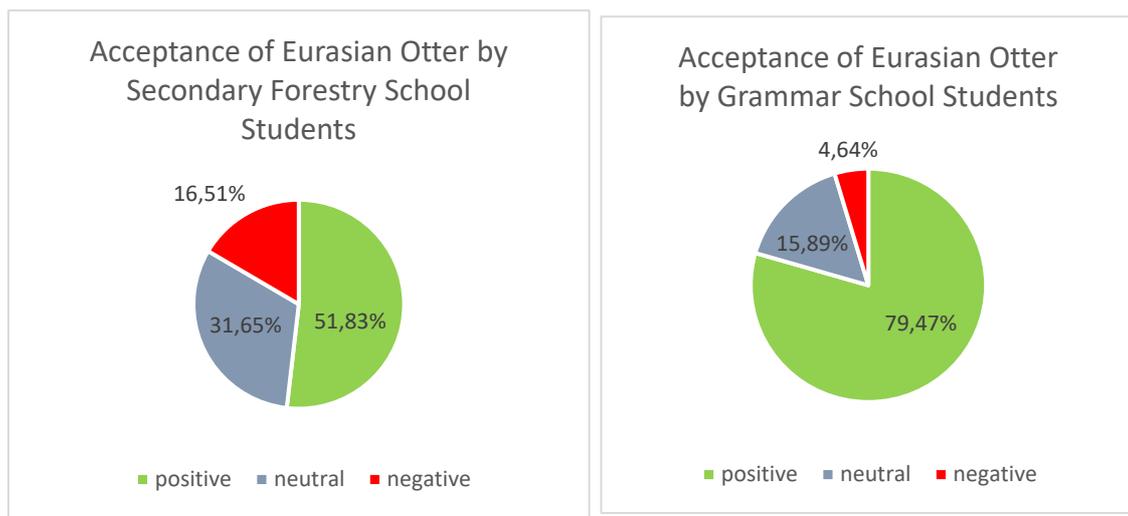


**Chart 5** Acceptance of Elk

There is an evident difference in the perception of the presence of Elk in the wild. Forestry students show negative attitude, for which there is no easily explained reason and any attempts at so doing would require answers to additional questions.

### Eurasian Otter (*Lutra lutra*).

The decrease of the Eurasian Otter population was mainly caused by long-term efforts to eliminate this species as a fish predator and by hunting it for its valuable fur. Simultaneously, changes in the landscape, especially the regulation of river flows followed by the construction of valley reservoirs, have also contributed to the species reduction. In 1941, the Eurasian Otter began to be protected by the law and as a consequence of this action, the number of otters ranged around 2,200 adult individuals in 2006 (Poledník et al., 2009). Nowadays, road transport has become the main cause of the Eurasian Otter mortality, amounting to 81% of incidents, as mentioned in Poledníková et al. (2017).

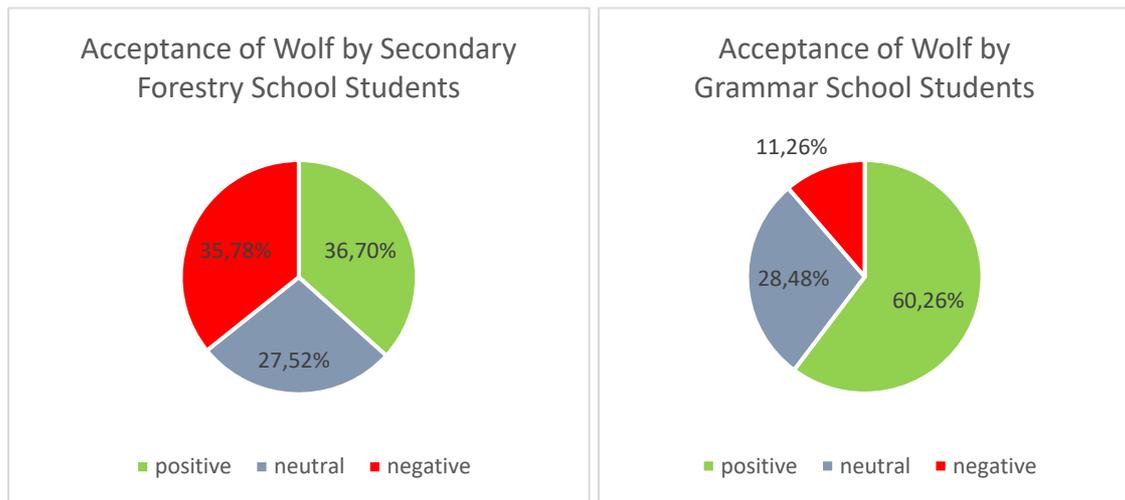


**Chart 6** Acceptance of Eurasian Otter

It is not easy to explain this unfavourable point of view regarding the Eurasian Otter presence in the wild by the forestry school students (16 + 32%) as the presence of the Eurasian Otter is neither related to forest management nor to hunting affairs.

## Wolf (*Canis lupus*)

In Bohemia, the increasing number of Wolf population was exterminated in the 18<sup>th</sup> century. In the Moravian-Silesian mountains, the last young were documented in 1822. Later, migrant individuals came and left repeatedly until the year 1900. In 2015, the first young wolves were born in a protected area of Kokořínsko and since then the population has gradually grown. The Wolf belongs to extremely unpopular animals among farmers and hunters.

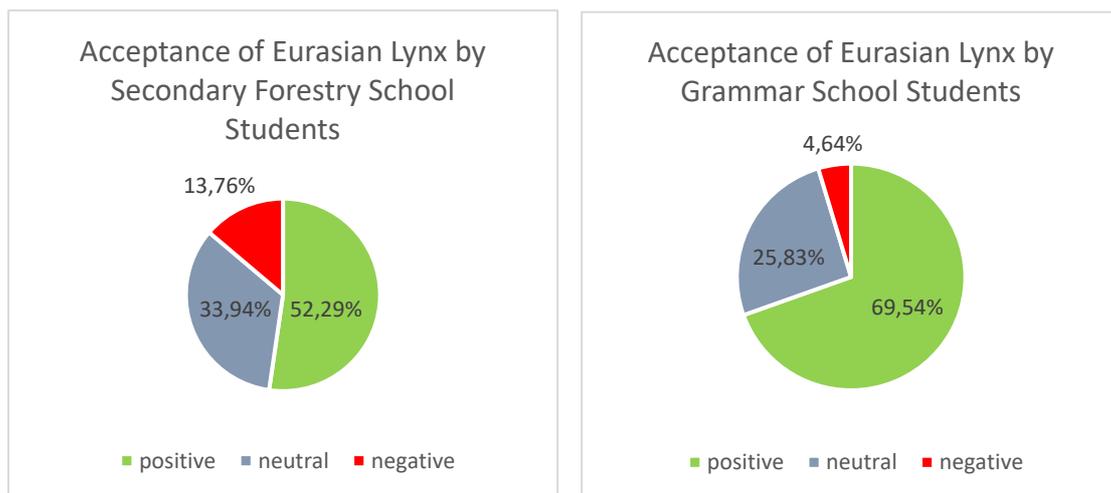


**Chart 7** Acceptance of Wolf

The acceptance of the wolves' presence in the Central European countryside has revealed the greatest difference in opinions regarding the presence of protected wildlife. 60% of grammar school students and only 35% of students of forestry schools can see the Wolf presence as positive, which is not a lot compared to other animals. Evidently, the presence of the Wolf is not in collision with forest operations, thus the apparent aversion must be caused by the bad reputation of wolves and even real, but oftentimes exaggerated, damage caused to farmers.

## Eurasian lynx (*Lynx Lynx*)

The last Eurasian Lynx was caught in the Bohemian town of Tábor in 1835, while, in Moravia and Silesia, migrant ones were still hunted in the second half of the 19<sup>th</sup> century. After the beginning of the Lynx protection in Slovakia, the number of the Carpathian population increased to the point where the Eurasian Lynx returned to the Beskids, (a mountain range in East Bohemia) in 1948. Since then, the Lynx has attempted to reproduce in the Czech Republic several times, although it was not successful until 1973. Then, the German-reintroduced couple of Lynx came to the Šumava mountains and had the young. Nowadays, the Eurasian Lynx is very unpopular among gamekeepers due to its deer hunting.

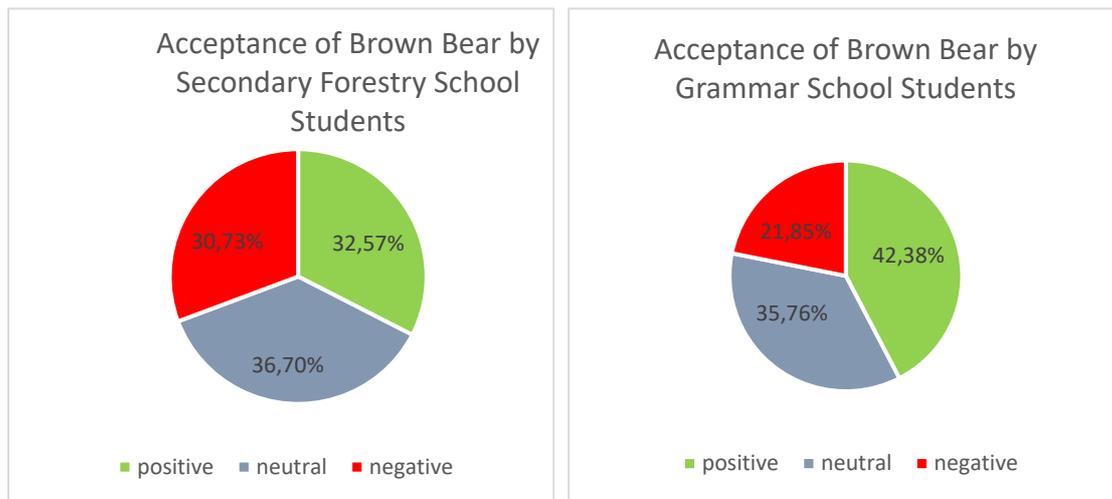


**Chart 8** Acceptance of Eurasian Lynx

The forestry students' attitude to the Lynx presence is related to its predating tastes and habits. In the Czech Republic, the European Roe Deer is the main prey of the Lynx and thus the competitive relationship between man and Lynx has arisen. However, this happens only in the places of the Lynx's occurrence. If we consider the grammar school students' opinion, we are not sure of the reasons for similar results with the forestry school students. Perhaps, there might have been some form of influence by their parents or grandparents with students from families with forestry or hunting tradition.

## Brown bear (*Ursus Arctos*)

The south Bohemian bear population was wiped out from the Šumava mountains in 1856, while, in the Beskids mountain range, bears were still hunted in the second half of the 19<sup>th</sup> century. The last occurrence of the bear in Kavalčanky dates back to 1908. After the introduction of the bear legal protection in Slovakia (1930), the presence of the population increased to the point where bears began to re-spread into the Moravian-Silesian Region. Their first reoccurrence was documented in the Razula Primaeval Forest in 1946. Due to the current number of bears settled in Slovakia (approximately 1,500), migration to the Czech Republic is relatively frequent and bears presence in the eastern part of the Czech Republic is recorded annually with year-round habitat (Andreska, 2012 a, b).



**Chart 9** Acceptance of Brown Bear

The relationship between man and bear is unequivocally inconsistent. Unlike wolves or lynxes, bears can demonstrate aggressive behaviour. Naturally, this happens under certain circumstances only as evidenced through experience in neighbouring Slovakia. Hundreds of bears can live in Slovakia without causing harm to the local inhabitants, if elementary safety rules are observed. The neutral relationship towards their reintroduction into the wild was recorded equally by 36% of respondents, whereas the positive and negative views differ by 10%. This could have been caused by a better knowledge of the would-be foresters. We cannot neglect the influence of media that slowly but steadily influences the opinion of the widest strata of the population.

## Discussion

From the results obtained via the questionnaires, it is evident that the presence of some animal species in the wild is generally viewed positively. We can conclude that students of secondary forestry schools are more cautious in their decision making and more often tend to present a neutral or negative attitude.

Most students (59% of forestry school and 79% of grammar school) can see the positives of the Eagle Owl presence. The explanation is quite simple, the Eagle Owl was seen by the hunters as a predator of small animals and the young of some game species (e.g. Wild Boar or Roe Deer). Nevertheless, this is positive news. There is no doubt that a similar survey would have been significantly different 50 years ago, to the Eagle Owl's disadvantage.

Over two-thirds of the grammar school students (69%) and one-half of the forestry students (52%) have reported a positive acceptance of the Eurasian Lynx. The situation is the same in the case of the Eurasian Otter, where two-thirds of the positive results were provided by the grammar school students (79%) and one half by the forestry students (52%). The aversion to Eurasian Otter is mainly demonstrated by both sports and production fishermen. Therefore, we may speculate that a higher percentage of sports fishermen is to be found among the forestry school students.

The Elk is accepted quite positively – almost by a half of the students of each group. Just speculatively, the recorded 16% negative acceptance can be explained by the damage done to young forest cultures.

The Common Raven is nearly seen neutrally, with around a half of neutral answers provided by students of each group. When compared with the Eagle Owl, which has lived in the Czech countryside for a longer period of time than the Common Raven, returning massively just during the last 30 years, it is apparent that people are more used to the Eagle Owl's presence. What is more, the Common Raven is an unpopular bird in the eyes of Gamekeepers (and herdsman). Therefore, one-fifth of the negative answers provided by the forestry school students is considered to be a result of either a family or, perhaps, a personal negative experience usually uncommon in grammar school students.

Acceptances full of contradictions can eventually be deduced from answers regarding the Brown Bear, Wolf and Wild Boar. The recorded opinions are almost equal in each category and the acceptance rates range from one-third positive, neutral or negative. This can be caused by a vast media interest and the pressure experienced by the general public. It reflects the fact that the society is not unanimous in this regard and hence the opinions of students must also be somewhat affected. The only exception to the trend appears to be the acceptance of the Wolf by the grammar school students, with 60% of positive answers.

Our results can be compared with similar studies, e.g. the one conducted by Prokop and Kubiátko in Slovakia in 2008, where the attitude of 11 – 15-year-olds to the Prey (Hare) – Predator (Wolf) model was examined. The results have shown that, with the increasing age of pupils, the positive attitude towards the prey decreases, and gradually levels with the neutral acceptance of the Wolf. According to the authors, this could either reflect the more advanced "ecological thinking" of older pupils or, more simply put, the decreasing interest in animals during adolescence.

## Conclusion

The study examines the attitude of secondary school students to animals, whose number has increased in the wild during the second half of the 20<sup>th</sup> century, either following the

absence of presence (for example, Wolf, Lynx and Bear) or a very low occurrence rate (Eagle Owl, Eurasian Otter). Despite the pilot-nature of the study, the results seem to be quite interesting, although the authors are aware of the need to extend the number of respondents and to complement the future questionnaire with more specific questions. However, at present, it is evident that the presence of some species of birds and mammals could be viewed as an economic or physical threat. The presence of larger mammals can cause discomfort to a certain part of the society. The fact and resulting outcomes can only be mitigated with the help of verified information presented in the context of zoology or environmental education.

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