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SELECTION OF DIET BY WILD BOAR (*SUS SCROFA*) IN FLOODPLAIN FORESTS IN THE CZECH REPUBLIC

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Abstract
A wild boar (Sus scrofa) survives in different environments and it is successful reproduces. It is a very successful and competitive species due to its wide diet valence. Throughout the year, it has quality diet, reproductive success, and is a favorite game for hunters. It becomes a serious conflict species. Although it is a native species for European ecosystems, it is often discussed the overgrowth and problems it poses for cultural landscape and ecosystems. In the floodplain forests the wild boar is referred to natural food, but during the hunting season, it is given supplement feed. It has a wider range of diet components.
The study focuses on the influence of natural and supplement feed of the wild boar in the autumn and winter season at the site of the Soutok in the Czech Republic. It also summarizes the dynamics of diet intake and the preference of individual components in the context of feeding. Preferred diets are energy rich components such as acorns, beechnuts, maize etc., regardless of the natural food and supplement feeding. These components comprise a majority share and significantly affect the behavior of boar at different periods, depending on availability. Samples for evaluation were taken from the stomachs of the caught boar, the content was subsequently analyzed by the classic volumetric method.
Boars can very effectively respond to the availability of different diet components and prefer the most energy-rich diet in a given period. It is the most dominant species that can quickly consume natural components, it is multiplied by unnaturally high population density. In the winter period, large populations are dependent on feeding. The supplement feed, most commonly maize, is continually consumed in direct feed dependence.

Keywords: *wild boar, natural food, feed, supplement diet, game preserve*

1. Introduction

The Wild Boar is a species with a wide dietary valence, so it can survive in various environments and create a quality population (Rosell, Fernández-Llario & Herrero, 2001; Baubet, Bonenfant & Brandt, 2004; Irizar, Laskurain & Herrero, 2004). The impact on the landscape is enhanced by a high population density due to a sufficient amount of quality diet and the fact that boars are a favorite game (Schley, Dufrêne, Krier & Frantz, 2008).

The ideal time for boar is autumn, in terms of the diet offer. It is an opportunistic omnivore, it has a varied range of diet sources, its selections determines the diet offer (Schley & Roper, 2003). In the autumn, pulp fruits, field crops are maturing and fall of acorns and beech nuts in the seed years. Another very important source is the increased feeding of the hunters until the winter season.

The critical part of the year comes in the winter, as well as for all species of Central European fauna. During this period, the boars is intensively fed by hunters for the purpose of hunting. The winter season is a crucial period for wild boar, because a

natural food supply can be restricted by climatic conditions and is therefore often limited only to feeding.

Wild boars always consume at least one of the energy-rich diet ingredients, it can be acorns of oak (Schley & Roper, 2003), maize (Ballari et al. 2014) fruits or animal share (Briedermann, 1976; Massei et al. 1996). This is significant diet resources in this period. Enough of this food components are limited for different seasons, seed years etc.

It is a question of how the various components are attractive in a rich environment with natural food sources, and also with a supplement feed. Supplement feed seems as a least tedious to search.

We focused on the preference of food in the floodplain forest with predominant oak stands, diverse diet, and hunting management. We investigated the ratio of supplement components and natural components of diet. Our aim was to evaluate the dynamics of food intake in autumn and winter.

2. Data and Methods

Samples were taken from August 2014 to January 2015 from Soutok (Czech Republic).

The Soutok is located in large part the game preserve (Figure 1). These are floodplain forests, which are bordered on two sides by the large rivers Morava and Dyje (Fig 1). Free areas are most often formed by floodplain meadows. Frequent are wetlands, forest pools, blind rivers and watercourses. Forest stands are predominantly represented by oak (Quercus sp.), ash (Fraxinus sp.), alder (Alnus sp.), poplar (Populus sp.), willow (Salix sp.). The location is not significantly affected by human settlements and disturbed by humans. There is a high population of wild boars (7.6 ind./km2) and other ungulates (11.3 ind./km2), especially red deer (Cervus elaphus), fallow deer (Dama dama) and roe deer (Capreolus capreolus).

During the whole period, samples for analysis were obtained from the stomachs of the caught individuals. These were subsequently stored in the freezer boxes. In the laboratory, the diet composition was analyzed from the stomach content by a volumetric method. Feed data was obtained from land managers.

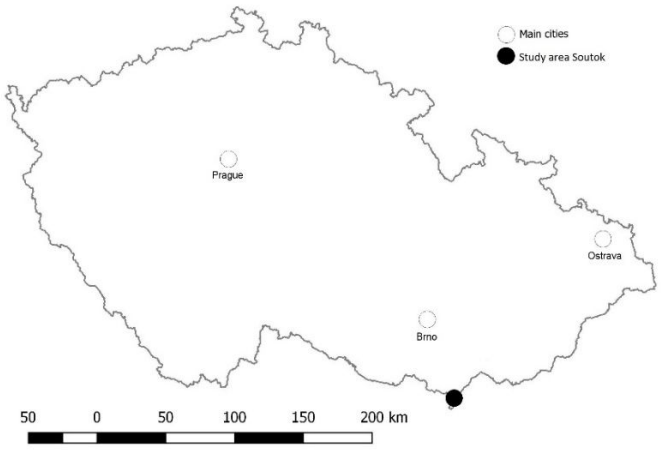


Figure 1: The map of the Czech Republic, with location of the site

3. Results and Discussion

For the monitored period from August 2014 to January 2015, a total of 79 wild boars stomach samples were evaluated. The largest share was piglets (59), then juveniles (15) and adults (5). Analysis of the samples detected a wide range of natural food components, including herbs, grass, wood, tubers, fruit, pine needles, tree leaves, roots, fungi, bark, moss, acorns, nuts, herb seeds, clams, beetles, rodents, amphibian, a feather, fish, earthworms and other indeterminate items of animal origin.

We monitored changes in the consumption of the supplement feed and natural food offers in the autumn - winter (Figure 3). Consumed natural food is always in negative correlation with the feeding. In the period from August to October, natural food is dominated by fruit, acorns and grass with herbs (Figure 2).

In this period, the oak seed year and due to the extensive oak stands, acorns were an important component of diet. The acorns were exhausted during November, this is increased by the high density of the stock of wild boars and other ungulates (11.3 ind./km2), who compete for this energy-rich diet. In these months, the fruit was used in more than 25 %, it is obvious that it was preferred at the expense of the acorns. In August, green biomass (grass, herbs) is most preferred when energy value is still at a good level. In the following months, the content of green matter was partially represented in the form of hay, which is not intended for wild boars, but for another ungulates.

Since November, there has been a decrease consumption of natural ingredients because their availability is limited. In December there is a significant decrease feedings and the roots dominate in the diet. The supplement feed is absent in the stomachs. In January, the consumption of the supplement feed is increase and the reduction of the roots, due to a re increase in the feeding.

The animal share is consumption very unevenly. In the period from August to October, it is mainly represented by invertebrates, amphibians or rodents. From November to January, entrails of captured game are consumed which were left in nature. Other studies confirm that the animal component never predominates, but is always represented to a lesser extent (Massei, Genov & Staines, 1996). However, due to rapid digestibility, the animal component may be underestimated (Schley & Roper, 2003).

Very surprising is the very low or zero percentage of fungi that are widely available. In the case of actual stomach content, they should be detectable, although they are fast digestible (Schley & Roper, 2003). Abáigar (1993), Fournier-Chambrillon, Maillard & Fournier (1996), represent more than 50 %.

During the monitored period, feed was submit in different quantities according to the needs of hunting managers. The most intense was the submit of maize, followed by cereals (barley, oats) and beets. Most feeds were provided in September (185 q), November (250 q) and January (202 q). November is the most intense hunting period. Supplement feed accounted for more than 60% of the volume in the stomachs, predominantly maize. Consumed corn is always in positive correlation with the amount of supplement feed. In December, the opposite was the case, supplement feeds were only 10%. The dominant component of the diet was the roots, while the acorns was completely exhausted. In January, it was intensively feed with maize (17% content in the stomach), but also with beet (16% content in the stomach). Other authors also

report the importance of maize, both feed (Fournier-Chambrillon et al. 1996) and of the fields (Tucak, 1996).

Figure 2: Percentage share of diet components in individual months

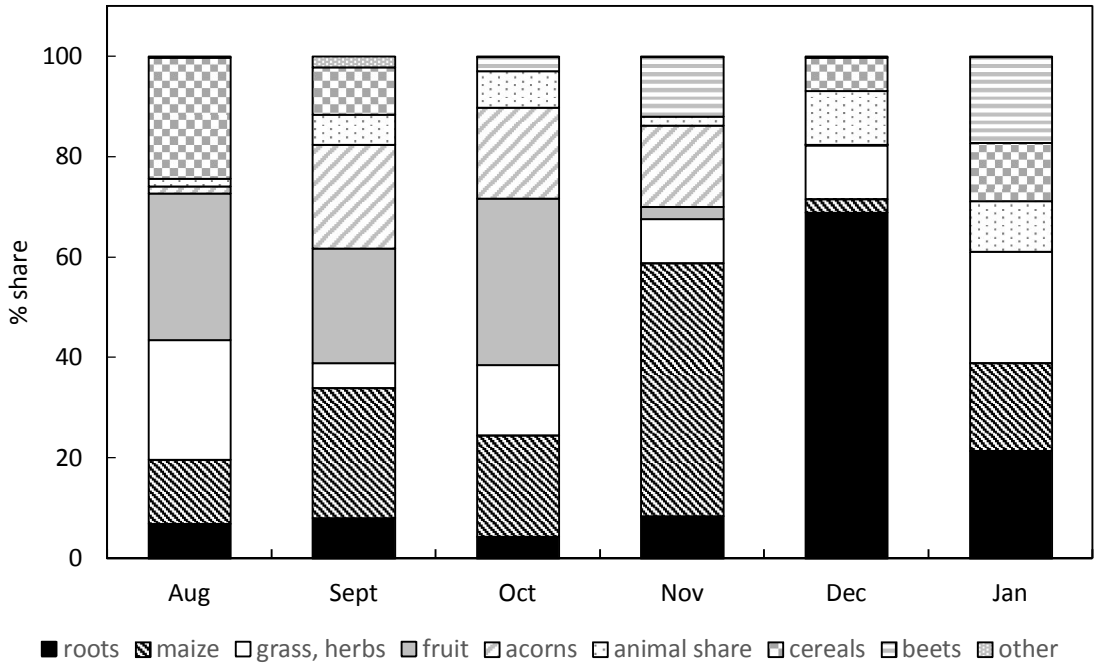
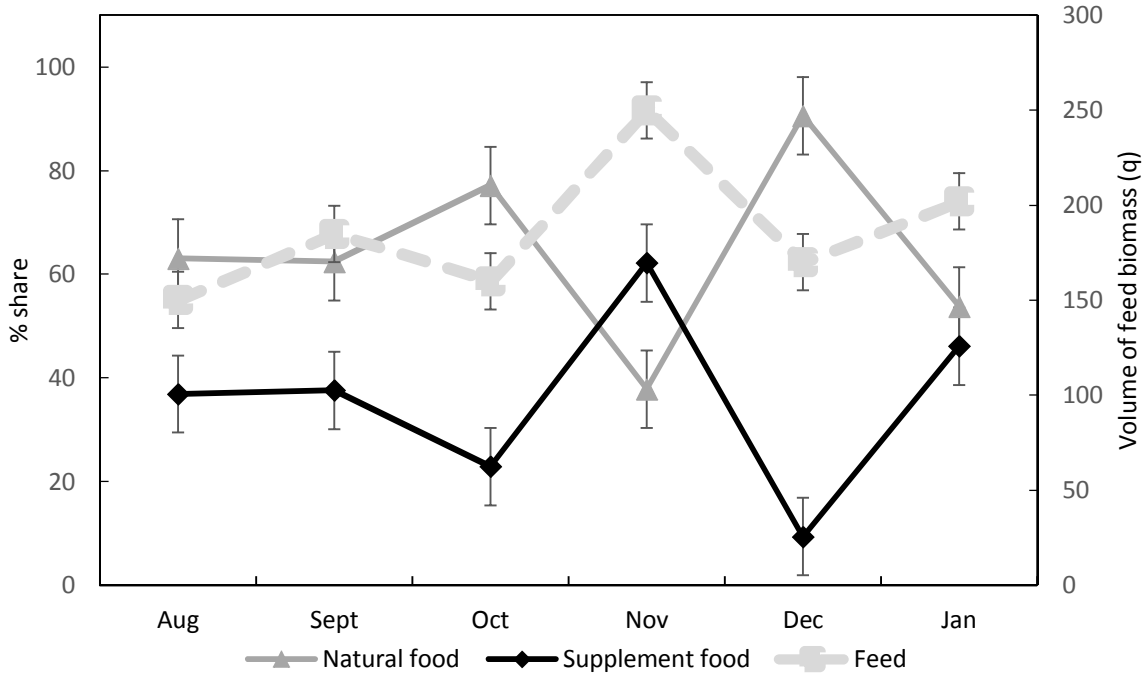


Figure 3: Dynamics of intake of natural and supplement food depending on feeding



By comparing the values, a statistically significant share of roots, grasses, supplement maize and fruit was found. When we compared the total food intake, significant differences were not found even for the individual diet components. Bruinderink, Hazebroek, & Van Der Voot (1994) reported that differences in consumption were not found among the sexes, but points to the age categories where the piglets consumed more animal food. Comparison of diet consumption among the age categories in our case has not been assessed, due to the uneven distribution of age categories.

Wild boars are fundamentally affected by the supplement feed, which also affects the intensity of consumption of natural food. The food strategy of the wild boars is very flexible and adaptable. It´s combine the abundant natural supply with artificially supplement feed. It is quite clear that in the case of a high population density on a site such as the Soutok where there is high competition for food resources, natural resources will be completely exhausted. Subsequently, game will depend on feeding. Evidence is the month of December, when it was significantly less feeding than in the other months. In addition, natural diet components such as acorns and fruits have been exhausted and the wild boar has been forced to look for roots, which symbolizes deprivation.

A period of seed years with enough acorns has a significant effect on the behavior (Durio, Fogliato, Perrone & Tessarin 2014) and population dynamics of wild boars (Massei et al. 1996). Acorns are preferred over all diet components, and if they are not represented in the diet, boar prefer other components, most often maize. Maize is comparable to nutritional values acorns (Hodgkinson et al. 2008). In the case of a large crop of acorns, the weight of the wild boar population increases, resulting in increased fertility and population growth (Massei et al. 1996). Other authors also confirm that the tree seed years have a positive effect on the overgrowth of this species (Schley and Roper, 2003). Higher frequency of seed years may be the cause (Övergaard, Gemmel & Karlsson, 2007). In our case, the main factor is maize, which is available and use to for feeding practically throughout the period.

4. Conclusion

This study summarizes the dynamics of the diet consumption of wild boars in the floodplain forests in the Czech Republic. It focuses on the importance of natural food and supplement feed components of a wild boar in autumn and winter. The results include data collected continuously from August to January. It is based on volumetry of 79 stomachs of wild boars. Samples were collected during seed years. Acorns influence diet selection, even though they have enough feed at all times. However, feed has a more significant impact on the long-term food strategy. Feeding can become an effective tool for management this species.

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