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

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Abstract

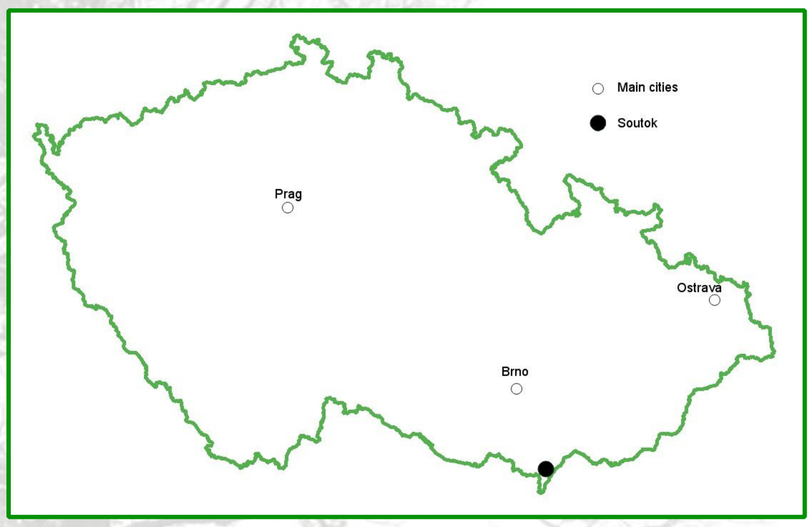
A wild boar (Sus scrofa) survives in different environments and it is successful reproduces. It is a very successful and competitive species due to its wide diet valence. Throughout the year, it has quality diet, reproductive success, and is a favorite game for hunters. It becomes a serious conflict 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.

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



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.

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.

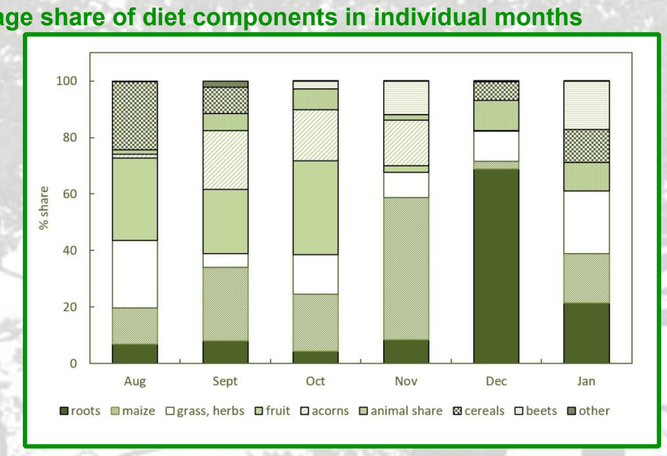
We monitored changes in the consumption of the supplement feed and natural food offers in the autumn - winter (Figure 3). Consumed natural food is always in negative correlation with the feeding. In the period from August to October, natural food is dominated by fruit, acorns and grass with herbs (Figure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

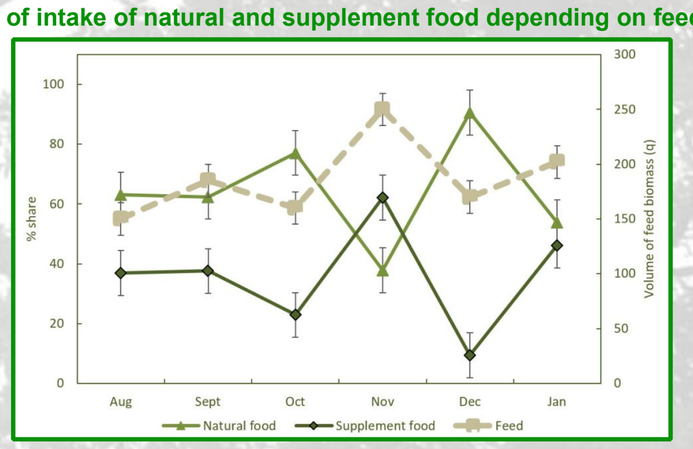
Very surprising is the very low or zero percentage of fungi that are widely available. In the case of actual stomach content, they should be detectable, although they are fast digestible (Schley & Roper, 2003). Abáigar (1993), Fournier-Chambrillon, Maillard & Fournier (1996), represent more than 50 %.

Figure 2: Percentage share of diet components in individual months



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 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.

Literature

[1] Abáigar, T. (1993). Régimen alimentario del jabalí (Sus scrofa, L. 1758) en el sureste ibérico. Doñana, Acta Vertebrata, 20(1), 35-48.

[2] Bruinderink, G. G., Hazebroek, E., & Van Der Voot, H. (1994). Diet and condition of wild boar, Sus scrofu scrofu, without supplementary feeding. Journal of Zoology, 233(4), 631-648. doi:10.1111/j.1469-7998.1994.tb05370.x

[3] Durio, P., Fogliato, D., Perrone, A., & Tessarin, N. (2014). The Autumn diet of the wild boar (Sus scrofa) in an alpine valley. Preliminary results. Journal of Mountain Ecology, 3.

[4] Fournier-Chambrillon, C., Maillard, D., & Fournier, P. (1996). Variabilité du régime alimentaire du sanglier (Sus scrofa L.) dans les garrigues de Montpellier (Hérault). Gibier Faune Sauvage, 13(4), 1457-1476.

[5] Massei, G., Genov, P. V., & Staines, B. W. (1996). Diet, food availability and reproduction of wild boar in a Mediterranean coastal area. Acta Theriologica, 41(3), 307-320.

[6] Övergaard, R., Gemmel, P., & Karlsson, M. (2007). Effects of weather conditions on mast year frequency in beech (Fagus sylvatica L.) in Sweden. Forestry, 80(5), 555-565. doi: 10.1093/forestry/cpm020

[7] Schley, L., & Roper, T. J. (2003). Diet of wild boar Sus scrofa in Western Europe, with particular reference to consumption of agricultural crops. Mammal review, 33(1), 43-56. doi: 10.1046/j.1365-2907.2003.00010.x

[8] Tucak, Z. (1996). Ergebnisse von 155 Mageninhaltsuntersuchungen von Schwarzwild (Sus scrofa L.) im ungegatterten Teil des Waldjagdrevieres Belje in Baranja. Zeitschrift für Jagdwissenschaft, 42(3), 165-172. doi: 10.1007/BF02242540

This research was supported by the Technology Agency of the Czech Republic: Project number: TJ01000286.