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Practical verification of food supply to game in conditions of large-scale shelterwood system

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ABSTRACT: In the hunting district Hády (897 ha), which is operated by the Křtiny Training Forest Enterprise, 383 samples of biomass utilizable as wildlife forage were collected and analysed; they were also quantified on the basis of surface coverage of grass and woody undergrowth. Grass and herbaceous biomass production in forest stands was 180,740 kg (average 0.02 kg/m^2), on road shoulders and other areas it amounted to 25,213 kg (average 0.150 kg/m^2). The greatest diversity of plant species (72) was detected on the other areas. In total, forest and other areas provide 205,953 kg of utilizable grass and herbaceous biomass available during the vegetation period. Production of woody biomass, i.e. buds and shoots, amounted to 307,243 kg (average 0.035 kg/m^2). The woody component of food in this locality was represented mainly by the species of beech, hornbeam, maple, and ash. Evaluation of sample plots revealed that the area covered by herbs and grasses in the studied forest unit was reduced due to a large-scale shelterwood system. On the other hand, a markedly increased supply of food from woody biomass was found to be available in the form of buds, leaves and shoots. The number of individuals in the advance regeneration of woody species in undergrowth ranged between 270 and 380,000 pcs/ha. Average values used for the calculation of utilizable energy in biomass were obtained from a laboratory measurement of biomass samples and complemented with data from literature. Average values of forest herbs and grasses = 0.60 MJ; buds, leaves and shoots in the growing season = 0.75 MJ. Average daily food consumption was converted to net digestible energy in MJ. In order to estimate food sufficiency with respect to quality energy requirements were calculated on the basis of the metabolic size of roe deer and hare bodies. In the quantitative assessment of available food supply, the standardized game stock would utilize 51% of grass and herbaceous forage and 7.5% of food from woody biomass. In the qualitative assessment of available food supply it was demonstrated that energy requirements of roe deer and hare were fully covered by their daily quantitative consumption of herbaceous, grass and woody biomass.

Keywords: game management; carrying capacity; biomass production; energy requirement

Game is an inseparable constituent of forest ecosystems. The balance between producers and consumers has been developed by individual ecosystems through evolution for many thousands of years. The present amount of food supply to game is however considerably affected by humans and their activities in the forest. In order to keep a certain balance between the vegetation and herbivorous wild animals, the game stock must be kept under control according to the size of actual food supply.

An experimental assessment of food supply to ungulate game in conditions of a large-scale shelterwood system was made for the purpose of responsible forest management with the aim to establish an adequate winter stock of game corresponding to available food supply and to compare the obtained results with the current game management practice in the given locality. A forest unit chosen for the experiment was the hunting ground Hády at the Training Forest Enterprise of Masaryk Forest in Křtiny. TFE Křtiny is a special-purpose facility of Mendel University of Agriculture and Forestry Brno focused on pedagogical and research activities. The exercise of hunting rights is carried out at TFE's own expense.

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State of the art

Food composition, food niches of herbivorous ungulate game and their overlapping were studied by Homolka (1991, 1993, 1996), Homolka and Heroldová (1992). The annual average amount of woody biomass in the food of roe deer, red deer and mouflon amounts to 74%, 39% and 28%, respectively. Other important food components are dicotyledonous herbs and grasses.

Diversity and quality of food resources are influenced by management methods, age and species composition of forest stands, altitude, year season and bedrock (Katreniak 1992).

Hofmann (1989) specified three basic feed types of European ruminant ungulate animals on the basis of their digestive tract anatomy and physiology as follows: browsers (*Foliavora*), intermediate feeders (*Herbivora*) and grazers (*Gramnivora*). The roe deer as a typical example of browsers takes in food which is easy to digest and rich in nutrients; it goes out for grazing 11 to 12 times in the course of 24 hours. The low amount of microorganisms in its reticulum prevents roe deer to properly utilize plants rich in fibre, and this is why the species does not strip but rather takes in food richer in energy such as fruits, buds, leaves, flowers, annual shoots. Its energy consumption is relatively high and a daily consumption of dry matter per 1 kg live weight amounts to an annual average of about 60 g (Lochman et al. 1964). The mouflon (grazer) has a capacity of digesting food rich in fibre. The process of digestion and periods of chewing are longer. In the course of 24 hours there are only 6 grazing periods at maximum in this species. The place between these two extremes is taken by so called intermediate feeders such as red deer which can accommodate to various kinds of forage quality and is capable of consuming both readily digestible and hard-to-digest feed residues. The red deer needs from 5 to 7 feeding periods in the course of 24 hours and its daily consumption of dry matter per 1 kg live weight amounts to an annual average of about 34 g (Lochman et al. 1964).

MATERIAL AND METHODS

The hunting ground Hády is situated in the southern part of Křtiny Training Forest Enterprise of Masaryk Forest, mainly in southern aspect locations with annual temperature and precipitation means of 8°C and up to 500 mm, respectively. The geological structure of the territory is formed of Brno igneous rocks consisting of deep magnetites, granodiorites to granites, cataclastic coarse-grain biotitic granodiorites. Other constituents are various limestones, conglomerates and quartzites of the Moravian Karst. The wide range of soil types reflects the diversity of geological bedrock, geomorphological division and zonality of forest vegetation. The hunting ground is situated at altitudes ranging from 220–464 m above sea level. The vegetation period (+5°C) is 270 days and the growing season lasts 227 days. Hydrological conditions in the hunting ground are stabilized, game has access to running water.

Total area of the studied hunting ground is 897 ha (99.1% forest, 0.2% arable land, 0.06% pastures, 0.64% other areas). The hunting ground is situated mainly in forest vegetation zone 2 (67.1%), FVZ 3 (26.7%), FVZ 1 (4.1%) and FVZ 4 (2.1%).

The area and percentages of forest type groups are presented in Table 1 with the forest type groups being arranged in a descending order by the carrying capacity of edaphic categories (potential carrying capacity).

Table 1. Area distribution of forest type groups according to the carrying capacity of edaphic categories

Forest type groups	Area (ha)	Area (%)
1J	9.07	1.01
2A	27.83	3.13
2D	29.83	3.36
3A	0.43	0.05
3D	46.30	5.21
3J	4.13	0.45
3L	0.49	0.06
4D	13.97	1.56
1C	0.21	0.02
1H	3.26	0.35
2B	124.87	14.10
2C	32.89	3.70
2H	165.76	18.73
2S	112.43	12.69
3B	53.74	6.06
3C	1.31	0.13
3H	57.01	6.43
3S	71.80	8.01
3W	1.07	0.10
4S	4.07	0.44
1X	23.14	2.60
1Z	0.42	0.05
2K	10.02	1.11
2X	83.55	9.99
2Z	6.03	0.66
Total	883.63	100.00

Table 2. Distribution of conifers and broadleaves according to age classes in hectares

Age class	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	Σ
Conifers	58	46	30	6	4	14	12	13	19	57	26	12	14	10	5	1	4	331
Broadleaves	29	34	36	15	9	17	20	16	15	45	80	59	78	57	24	1	1	536
Total	87	80	66	21	13	31	32	29	34	102	106	71	92	67	29	2	5	867
Normal forest area	71	71	71	71	71	71	70	70	70	63	50	38	31	23	15	8	3	867

As for the forest tree species composition, the broadleaves account for the highest proportion – 62.0% (beech 7.0%, oak 39.5%, hornbeam 1.6%, linden 2.0%, other broadleaved species 1.9%). The proportion of conifers is 38.0% (Norway spruce 14.3%, pine 14.3%, European larch 6.8%, fir 1.8%, Douglas fir 0.8%). Commercial forest forms are represented only by the high forest.

A comparison of the forest stand area with the normal forest area according to age class distribution shows more extensive areas occurring in age classes 1 and 2. On the other hand, the areas of age classes 4 through to 9 are markedly smaller. Age classes 10 through to 15 are represented by a larger proportionate area than that of the normal forest. Age classes 1 and 2 are dominated by conifers, broadleaves dominate from age class 11 (see Table 2).

The above forest vegetation zones and forest types have been taken over from the Regional Forest Development Plan for the Drahanská vrchovina Upland.

The above data on tree species distribution and forest form are based on the current Forest Management Plan in force for the Forest Management Unit of Křtiny TFE in the period 2003–2012.

Game stock

Based on the game census, the spring roe deer stock in the hunting ground Hády is estimated to be 60 heads. The stock of hare is at minimum in this hunting ground and the game has not been shot here for several years. The wild boar that lives here from autumn to spring does not cause any damage and its stock is not standardized in the hunting ground. The wildlife is considerably affected by commercial and recreational activities in the forest.

Based on Decree 491/2002, the standardized game stock is set by the decision of the department of environment, municipality of Šlapanice up to 85 heads of roe deer and 151 heads of hare. Minimum roe deer and hare stocks are 22 and 44 heads, respectively. A total number of ungulate game units in the hunting ground is 21.25 heads.

The calculation of ungulate game units according to the carrying capacity of edaphic categories (potential carrying capacity) was made in the framework of a game management survey at the Brno Branch of Forest Management Institute in Brandýs nad Labem. Results of the calculation are identical with the game stock stipulated by the above-mentioned Decree 491/2002 (see Table 3).

Assessment of utilizable biomass

Based on the typological division, representative sample plots (1 × 1 m) were chosen (291 in forest stands, 35 on shoulders of paved forest roads, 57 on other areas) in the vegetation period to monitor the current mean production (g/m^2) of biomass utilizable by game.

The number of sample plots was selected proportionally to the size of assessed homogeneous plots in grassy, herbaceous or woody undergrowth with at least two plots chosen for each stand.

Biomass was cut right above the ground, weighed in the field and sorted out to grass and woody (leaves and stems separately) components.

Table 3. Calculation of wildlife units according to potential carrying capacity (Bagár 2003)

Classification	Carrying capacity	Edaphic categories	Area (ha)	Ungulate units min.–max.
I. a	exceptionally high	V, U, L, D, A, J	131.10	3.41–3.93
I. b	very high	S, F, C, B, W, H, O	500.71	10.52–12.52
II.	medium	M, K, A, I, P (X, Z, Y)	251.82	4.03–5.04
III	rather low	G, Q	0	0
IV.	low	R, T, (G)	0	0
Total			883.63	17.96–21.49

The sampling was made along with the recording of total coverage areas of woody species and non-woody undergrowth and with the determination of individual represented species.

We calculated the total production of biomass utilizable by game on the respective sample plots with subsequent summarization for the entire area under study.

Assessment of mean quantitative and qualitative food requirements

Average daily food amounts for the respective game species were derived from publications of the following authors: Bubeník (1954, 1984), Herzig et al. (1960), Šikula and Zubrický (1964), Rozmara (1981). The data were used to calculate the values of total food consumption for the wildlife species studied.

Data used for the calculation of the net energy of mean food consumption by wildlife occurring in the hunting ground were those taken over from the catalogue of feeds issued by Research Institute of Animal Nutrition in Pohořelice (VÚVZ 1995).

Control data were obtained from the laboratory analyses of aggregative samples collected in the Hády hunting ground and processed at VFU Brno and Mikrop Čebín. Daily food consumption means were converted to net digestible energy in MJ.

The calculation of energy requirements based on the metabolic size of roe deer and hare game was used to assess food sufficiency with respect to quality according to CAZV methodology published in 1994.

RESULTS

Production of biomass utilizable by game

A total of 291 samples for the quantitative and qualitative assessment of biomass available to game was collected in forest stands of a total area of 883.6 hectares.

The summarized production of grass and herbaceous biomass amounted to 180,740 kg with average production being 20 g/m^2. Woody biomass (leaves, buds and shoots) was produced at an amount of 307,243 kg (average 34.5 g/m^2).

Thirty-five samples used for the quantitative and qualitative assessment of biomass were collected on shoulders of paved forest roads. Total length of paved forest roads in the area under study is 16.8 km (18.9 m/ha of forest area). Total area of road shoulders and ditches suitable for the production of grass and herbaceous biomass was 33,600 m^2. Total production of grass and herbaceous biomass in this area was 5,024 kg (average 150 g/m^2).

A total of 57 samples used for the qualitative and quantitative biomass assessment was collected on plots with rides, access strips to power lines, unpaved roads, roadside landings and in a seed orchard. Total area of these plots was 13,4 hectares; total production of grass and herbaceous biomass amounted to 20,189 kg (average 150 g/m^2).

Total number of samples collected in the Hády hunting ground to assess the production of biomass utilizable by game was 383. The grass and herbaceous component of the biomass included 72 plant species.

Average production of grass and herbaceous biomass (20 g/m^2) in forest stands managed under a large-scale shelterwood system was found to be very low due to shade. Average production of grasses and herbs on other areas (rides, access strips to power lines, etc.) and road shoulders was also found to be very low (150 g/m^2) as compared with the production of an average meadow (2,850 g/m^2). This biomass is however a primary source of food supply to roe deer that looks for food in a selective manner (browser feeding type – *Foliavora*), and it is also the relatively high grass and herb species diversity (72 plant species) that suits the food requirements of roe deer game very well.

On the other hand, the production of woody biomass (leaves, buds, shoots) is very high in the large-scale shelterwood system. Representative sample plots of 1 m^2 in the tree undergrowth were found to contain from 27 to 38 individuals (270,000–380,000 pcs/ha) of advance regeneration at heights ranging from 10–70 cm. Nutrient rich sites were found to contain even more than 100 pcs/m^2. The abundant understorey of deciduous tree species in regenerated stands is only negligibly affected by roe deer.

Total production of biomass utilizable by game in the hunting ground Hády is presented in Table 4.

Table 4. Total production of biomass utilizable by game – Hády

	Forest stands (kg)	Road shoulders and other areas (kg)	Total (kg)
Grass, herbs	180,740	25,213	205,953
Leaves, shoots	307,243	–	307,243
Total biomass production			513,196

Food consumption by individual game species

The assessment of average daily food consumption by individual game species was based on works published by Bubeník (1954, 1984), Herzig et al. (1960), Šikula and Zubrický (1964) and Rozmara (1981). For calculation purposes the average daily food requirement of roe deer was established at 3.5 kg of grass and herbaceous biomass and 1.0 kg of woody biomass. The average daily food requirement of hare was established at 1.5 (0.2) kg.

Quantitative requirements for game food were as follows:

Primary grass and herbaceous forage for roe deer in the growing season:

3.5 kg/day × 200 days = 700 kg × recommended game stock of 85 heads = 59,500 kg.

Primary grass and herbaceous forage for hare in the growing season:

1.5 kg/day × 200 days = 300 kg × recommended game stock of 151 heads = 45,300 kg.

Total consumption 104,800 kg.

Available grasses and herbs 205,953 kg (100%).

Total consumption 104,800 kg (–50.9%).

Surplus of grass and herbaceous forage 101,153 kg (49.1%).

Primary woody biomass forage (buds, leaves, shoots) for roe deer in the growing season:

1.00 kg/day × 200 days = 200 kg × recommended game stock of 85 heads = 17,000 kg.

Primary woody biomass forage (buds, leaves, shoots) for hare in the growing season:

0.20 kg/day × 200 days = 40 kg × recommended game stock of 151 heads = 6,040 kg.

Total consumption 23,040 kg.

Available woody biomass 307,243 kg (100%).

Total consumption 23,040 kg (–7.5%).

Surplus of woody biomass forage 284,203 kg (92.5%).

Although the mean production of non-woody biomass per 1 m^2 is relatively low in the undergrowth, the summarized production represents a volume that is a double of the food supply to the recommended game stock in the area under study. Food supply represented by woody biomass occurring in the undergrowth is utilized only at 7.5%.

Utilizable energy in biomass

The calculation was made using the average values of utilizable energy established by the laboratory measurement of biomass samples and complemented by data from literature. The average values were 0.60 MJ (net energy) for forest herbs and grasses and 0.75 MJ (net energy) for buds, leaves and shoots at the time of vegetation.

Utilizable energy contained in the daily grass and herbaceous biomass quantitative requirement of roe deer was 3.50 kg × 0.60 = 2.10 MJ.

Utilizable energy contained in the daily grass and herbaceous quantitative requirement of hare was 1.50 kg × 0.60 = 0.90 MJ.

Primary grass and herbaceous forage for the studied roe deer population in the growing season:

3.5 kg/day × 200 days = 700 kg × 0.60 MJ = 420 MJ × recommended game stock of 85 heads = 35,700 MJ.

Primary grass and herbaceous forage for the studied hare population in the growing season:

1.5 kg/day × 200 days = 300 kg × 0.60 MJ =180 MJ × recommended game stock of 151 heads = 27,180 MJ.

Total energy from grass and herbaceous forage for game 62,880 MJ.

Available grasses and herbs 205,953 kg × 0.60 MJ = 123,572 MJ (100%).

Total consumption 62,880 MJ (–50.9%).

Surplus of grass and herbaceous forage = 60,692 MJ (49.1%).

Utilizable energy contained in the daily quantitative requirement of food from woody biomass for roe deer was 1.0 kg × 0.75 = 0.75 MJ.

Utilizable energy contained in the daily quantitative requirement of food from woody biomass for hare was 0.20 kg × 0.75 = 0.15 MJ.

Primary woody biomass food (buds, leaves, shoots) of roe deer in the growing season:

1 kg/day × 200 days = 200 kg × 0.75 MJ = 150 MJ × recommended game stock of 85 heads = 12,750 MJ.

Primary woody biomass food (buds, leaves, shoots) of hare in the growing season:

0.2 kg/day × 200 days = 40 kg × 0.75 MJ = 30 MJ × recommended game stock of 151 heads = 4,530 MJ.

Total energy value of game food containing woody biomass = 17,280 MJ.

Available food containing woody biomass 307,243 kg × 0.75 MJ = 230,432.25 MJ (100%).

Total consumption 17,280 MJ (–7.5%).

Surplus of woody biomass food 213,152.25 MJ (92.5%).

Energy requirements of the game

Sufficiency of energy content in roe deer forage was assessed by the calculation of energy requirements in ruminants based on the specification of metabolic body size according to CAZV methodology published in 1994.

Calculation of maintenance energy requirements of an average roe deer (15 kg live weight) at normal physical activity:

$15^{0.75}$ = 7.62 = metabolic size of roe deer body.

Energy requirement per unit metabolic body size = 0.269 MJ.

Total energy requirements of roe deer at normal physical activity = 7.62 × 0.269 MJ = 2.05 MJ/day.

Calculation of maintenance energy requirements of an average hare (4 kg live weight) at normal physical activity:

$4.0^{0.75}$ = 2.83 = metabolic size of hare body.

Energy requirement per unit metabolic body size = 0.371 MJ.

Total energy requirements of hare at normal physical activity = 2.83 × 0.371 MJ = 1.05 MJ/day.

The calculations show that the energy requirements of roe deer and hare in the hunting ground are fully met by the daily quantitative consumption of herbaceous, grass and woody biomass.

DISCUSSION

Game stock – research results corroborate the applicability of standardized game stock calculation methodology both according to Decree 491/2002 and according to the methodology of Forest Management Institute based on the potential carrying capacity of the hunting ground and its edaphic categories. According to the methodologies, the food supply produced in conditions of the large-scale shelterwood system covers food requirements of the above specified game stock with no detriment to forest management.

Food supply quality – utilizable energy (MJ) found by the laboratory measurement of mixed biomass samples produced in the area under study corresponds by order with data for the respective plant species in the catalogue of feeds issued by VÚVZ Pohořelice (1995) and with data presented by Bubeník (1954, 1984).

Energy requirements of the game – according to the CAZV methodology (CAZV 1994), the energy requirement per metabolic body size unit amounts to 0.269 MJ, which corresponds to a daily requirement of 2.05 MJ. According to Bubeník (1984), the energy requirement of roe deer per metabolic body size unit amounts in summer to 130 kcal (0.544 MJ), which corresponds to a daily requirement of 4.15 MJ. The weighted mean of energy amount contained in food supply and detected by the assessment of collected biomass samples amounted to 0.633 MJ/kg, which corresponds to a daily energy consumption of 2.85 MJ at an intake of 4.5 kg food. No further food sources occur in the area under study, and the volume of food intake (4.5 kg) corresponds to the upper limit of food intake capacity in roe deer. The established daily energy requirement is approximately in the middle of values presented in the above-mentioned literature references. The detected values are considered applicable since energy requirements are ruled by many factors such as pregnancy, lactation, mewing or period of growth.

CONCLUSION

The results of quantitative and qualitative research into food supply to game indicated that the production of biomass utilizable by game in the area under study was sufficient. No reasons are therefore seen for a failure to fulfil the standardized roe deer stock defined on the basis of Decree 491/2002 and further corroborated by the calculation of game units according to the potential carrying capacity based on edaphic categories. The studied area shows a pronounced surplus of both grass and herbaceous (49.0%), and woody (92.5%) biomass utilizable by game. The minimum impact of wildlife on woody species vegetation due to the overproduction of biomass utilizable by the game is further corroborated by the fact that no damage caused by game occurred in the area under study in the last five years. Although the woody biomass supply in the form of buds and shoots is excessive thanks to the large-scale shelterwood system, with respect to the low energy value of this kind of forage it is recommended that the roe deer game will also be given species-specific feeds from September to the end of November, which will facilitate the development of sufficient fat reserves needed for the winter time of starvation.

It is particularly important to ensure as much winter rest as possible in order to reduce to minimum the game energy expenditure due to forced movement. High attendance of the hunting ground is a significant factor of disturbance adversely affecting the energy balance of the game.

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Praktické ověření potravní nabídky zvěři v podmínkách velkoplošně-podrostního způsobu hospodaření

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ABSTRAKT: V honitbě Hády na Školním lesním podniku Masarykův les Křtiny o výměře 897 ha bylo odebráno a analyzováno 383 vzorků biomasy využitelné jako potrava pro zvěř a byla provedena její kvantifikace na základě plošné pokryvnosti travinného a dřevinného podrostu. V lesních porostech byla zjištěna celková produkce 180 740 kg travní a bylinné biomasy (průměr 20 g/m^2). Na krajnicích cest a ostatních plochách s produkcí travin a bylin 25 213 kg (průměr 150 g/m^2). Největší pestrost rostlinných druhů (72) měly ostatní plochy. Lesní a jiné plochy poskytují celkem 205 953 kg využitelné travní a bylinné hmoty, která je k dispozici v průběhu vegetační doby. Dále byla zjištěna produkce 307 243 kg (průměrně 35 g/m^2) dřevinné biomasy, tj. pupenů a výhonků. Dřevinnou složku potravy v této lokalitě vytvářejí hlavně dub, buk, habr, javor a jasan. Vyhodnocením zkusných ploch bylo zjištěno, že pokryvnost bylin a trav ve sledovaném lesním celku je snížena v důsledku velkoplošně-podrostního způsobu hospodaření. Na straně druhé byla zjištěna výrazně zvýšená nabídka potravy dřevinného původu ve formě pupenů, listí a výhonků. Na zkusných plochách zjištěný počet jedinců dřevinného nárostu v podrostu činil 270–380 000 ks/ha. Pro výpočet využitelné energie v biomase byly použity průměrné hodnoty zjištěné laboratorním vyhodnocením odebraných vzorků biomasy a doplněné literárními údaji. Průměr lesních bylin a trav = 0,60 MJ; pupeny, listy a výhonky v době vegetace = 0,75 MJ. Denní průměrná spotřeba potravy byla převedena do netto stravitelné energie v MJ. Pro posouzení dostatečnosti potravy z hlediska kvality byl použit výpočet potřeby energie na základě metabolické velikosti těla srnčí a zaječí zvěře. Při kvantitativním posouzení dostupné potravní nabídky by normované stavy zvěře využívaly 51 % travní a bylinné potravy a 7,5 % potravy dřevinného původu. Při kvalitativním posouzení dostupné potravní nabídky bylo zjištěno, že energetická potřeba srnčí i zaječí zvěře je plně pokryta jejich denní kvantitativní spotřebou bylinné, travnaté a dřevinné biomasy.

Klíčová slova: management zvěře; úživnost; produkce biomasy; energetická potřeba

Zvěř je neoddělitelnou součástí lesních ekosystémů. Rovnováha mezi producenty a konzumenty se v jednotlivých ekosystémech vytvářela v průběhu evoluce po desítky tisíc let. V současnosti však člověk svými hospodářskými zásahy výrazně ovlivňuje množství potravní nabídky v lesním prostředí. Aby

udržel určitou rovnováhu mezi vegetací a býložravou zvěří, musí regulovat početní stavy zvěře podle aktuální velikosti potravní nabídky.

Pro potřebu odpovědného managementu zvěře bylo provedeno experimentální ověření výše potravní nabídky zvěři při velkoplošně-podrostním způsobu hospodaření s cílem stanovení této nabídce odpovídajících únosných kmenových stavů zvěře. Získané výsledky pak byly porovnány se současnou praxí mysliveckého hospodaření na sledovaném území. Jako experimentální plocha byla zvolena honitba Hády na Školním lesním podniku Masarykův les Křtiny. ŠLP Křtiny je účelovým objektem pro pedagogiku a výzkum Mendelovy zemědělské a lesnické univerzity v Brně. Výkon práva myslivosti je prováděn v režii tohoto zařízení.

Celková výměra výzkumně sledované honitby Hády je 897 ha. Les zaujímá 99,1 % výměry honitby, orná půda 0,2 %, pastviny 0,06 %, ostatní plochy 0,64 %.

Honitba Hády se nachází převážně ve 2. LVS – 67,1 %, ve 3. LVS – 26,7 %, dále v 1. LVS – 4,1 % a ve 4. LVS – 2,1 %.

Z hlediska druhové skladby mají největší zastoupení listnaté dřeviny – 62,0 % (buk 7,0 %, dub 39,5 %, habr 1,6 %, lípa 2,0 %, ostatní listnáče 1,9 %). Jehličnaté dřeviny mají zastoupení 38,0 % (smrk 14,3 %, borovice 14,3 %, modřín 6,8 %, jedle 1,8 %, douglaska 0,8 %).

Stavy zvěře – výsledky práce potvrzují použitelnost metodiky výpočtu normovaných stavů zvěře jak podle vyhlášky 491/2002 Sb., tak i podle metodiky Ústavu pro hospodářskou úpravu lesa, vycházející z potenciální úživnosti na základě edafických kategorií. V práci zjištěná potravní nabídka produkovaná za podmínek velkoplošně-podrostního způsobu obnovy lesa kryje potravní nároky na základě uvedených metodik stanovených stavů zvěře, aniž by byla zjištěna újma na lesním hospodářství.

Kvalita potravní nabídky – využitelná energie (MJ), zjištěná v laboratorně vyhodnocených směsných vzorcích biomasy produkované na sledovaném území, řádově odpovídá údajům uváděným pro odpovídající rostlinné druhy v katalogu krmiv Výzkumného ústavu výživy zvířat Pohořelice (1995) a v pracích Bubeníka (1954, 1984).

Energetická potřeba zvěře – podle metodiky ČAZV (ČAZV 1994) činí potřeba energie na jednotku metabolické velikosti těla 0,269 MJ, což odpovídá denní potřebě 2,05 MJ. Podle Bubeníka (1984) činí potřeba energie u srnčí zvěře na jednotku metabolické velikosti těla v letním období 130 kcal (0,544 MJ), což odpovídá denní potřebě 4,15 MJ. Vážený průměr množství energie obsažené v potravní nabídce, zjištěný vyhodnocením odebraných vzorků biomasy, je 0,633 MJ/kg, což odpovídá denní spotřebě energie 2,85 MJ při příjmu 4,5 kg potravy. Jiné potravní zdroje se ve sledované oblasti nenacházejí a pro výpočet použitý objem přijaté potravy (4,5 kg) odpovídá horní hranici možnosti příjmu potravy srnčí zvěří. Stanovená výše potřeby denní potřeby energie se nachází zhruba uprostřed hodnot udávaných uvedenými literárními zdroji. Zjištěné hodnoty pokládáme za použitelné, protože potřeba energie podléhá mnoha vlivům (březost, laktace, výměna srsti, období růstu).

Výsledky kvantitativního a kvalitativního průzkumu potravní nabídky ukazují na dostatečnou produkci zvěří využitelné biomasy ve sledovaném území. Není proto důvod pro nenaplnění normovaných stavů srnčí zvěře, stanovených na základě vyhlášky 491/2002 Sb. a potvrzených výpočtem jednotek zvěře podle potenciální úživnosti na základě edafických kategorií. Ve vegetačním období byl zjištěn výrazný přebytek jak travní a bylinné (49,0 %), tak i dřevinné složky (92,5 %) zvěří využitelné biomasy. Minimální impakt zvěře na dřevinnou vegetaci v důsledku nadprodukce využitelné biomasy je potvrzen skutečností, že na sledovaném území nebyly v průběhu posledních pěti let vykazovány žádné škody zvěří. Přes zvýšenou nabídku dřevinné potravy ve formě pupenů a výhonků v důsledku velkoplošného podrostního způsobu hospodaření doporučujeme (se zřetelem na její nízkou energetickou hodnotu) od měsíce září do konce listopadu druhově specifické přikrmování srnčí zvěře vhodnými krmivy. Umožníme tak vytvoření dostatečných zásob rezervního tuku, potřebného pro dobu zimního strádání zvěře.

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