

FEEDING BY THE COMMON DORMOUSE (*MUSCARDINUS AVELLANARIUS*): A REVIEW

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Abstract. The common dormouse (*Muscardinus avellanarius*) feeds on both vegetable food and food of animal origin. The dormouse has a varied diet, which depends upon latitude and nutritional plant species available and follows a strongly seasonal pattern. The main vegetable food sources are flowers in spring, berries in summer, nuts and soft fruits in autumn, but dormice also use many other food sources. Among vegetable foods, generative parts of plants (flower-buds, catkins, flowers, berries, and seeds) are preferred, whereas vegetative parts (leaf-buds, leaves, and shoots) are only subsidiary foods for these rodents. In spite of tannins that oak acorns contain, they may play an important part in the diet of dormice. During periods of scarcity of suitable vegetable food (e.g. in late spring and early summer), dormice use food of animal origin, primarily insects and bird eggs. Feeding on food of animal origin is expected to be more important in suboptimal habitats with a low diversity of nutritious plants. Some feeding activities attributed to the common dormouse (killing and eating of nestlings and even adult birds, hoarding of food supplies in autumn), may actually be performed by other animals (other dormouse species, *Apodemus* mice).

Key words: diet, vegetable food, hazel, insects, acorns, habitats

INTRODUCTION

Many papers containing information on the food of the common dormouse (*Muscardinus avellanarius*) have been published. A characteristic feature of most of these publications is the fact that English sources were ignored in Russian publications and *vice versa*. For example, in the recent compilation on dormice of the world by Rossolimo *et al.* (2001), ten publications in Russian and one old publication in German are cited in the chapter on feeding biology of the common dormouse, but English-based references are absent. Meanwhile, English publications on foraging and feeding by this species are based entirely on data collected in Britain and do not refer to any publications from other parts of the distributional range of the common dormouse. The main reason for such failures is probably the problem of the availability of relevant publications in respective countries and inadequate knowledge of respective languages.

Published data on feeding by the common dormouse are contradictory. According to Likhachev (1971, 1972), the common dormouse is almost completely vegetarian. On the contrary, in the opinion of Eden and Eden (2001, 2003), this rodent is a versatile omnivore and a very adaptive generalist feeder. The proposition that common dormice can kill and eat nestlings and even

adult birds (Yezerkas 1961; Lozan 1970; Gvozdak & Simochko 1977) is one of the extreme and controversial opinions concerning foraging by this species. Opinions of different authors regarding feeding by the common dormouse on acorns of oak (*Quercus* spp.) (c.f. Likhachev 1971; Bright & Morris 1996) and hoarding of food supplies (c.f. Lozan 1970; Airapetyants 1983) are also contradictory.

Dormice (Gliridae) characteristically lack a caecum (Ognev 1947; Storch 1978). This suggests that dormice may be less well adapted to digest cellulose using enteric symbionts than other small mammals. This is an important trophic limitation, due to which common dormice are less able to exploit easily available foods such as leaves (Bright & Morris 1996). Instead, the common dormouse is considered to be a selective feeder that must concentrate on the most nutritious food sources available, namely flowers, fruits and insects (Richards *et al.* 1984; Bright & Morris 1993). Foraging and diet of the common dormouse were best investigated in the south of England using radiotracking and direct observations (Bright & Morris 1991, 1992, 1993) and analysis of dormouse faeces (Richards *et al.* 1984). Similar methods were also used in the Bavarian Forest National Park (Müller-Stiebs 1996). In other parts of the common dormouse distributional range, most data on its feeding were obtained from

studies in captivity (Likhachev 1971; Lukshevich 1981; Airapetyants 1983; Lozan *et al.* 1990; Juškaitis 1993; Vogel 1997) and from food remains collected in the field (Lozan 1970; Juškaitis 1993). Analysis of stomach contents of common dormice gave satisfactory results in Slovakia (Holišová 1968), but not in Moldova (Lozan 1970) and Russia (Likhachev 1971).

The aims of the present paper are:

- 1) to review feeding by the common dormouse in different seasons according to publications from various parts of its distributional range;
- 2) to discuss contradictory opinions of different researchers on feeding by the common dormouse.

1. Feeding by the common dormouse in different seasons

1. 1. Dormouse feeding in spring

The activity season of the common dormouse lasts from early spring until late autumn, and the diet of these animals varies with the availability of different foods during this period. In different parts of its distributional range, the species composition of food plants is different, but dormice consume analogous parts of these plants (e.g. Lozan 1970; Airapetyants 1983; Juškaitis 1993; Bright & Morris 1993, 1996). Dormice always give preference to generative parts of plants (flower-buds, catkins, flowers, berries, and seeds), whereas vegetative parts (leaf-buds, leaves, and shoots) are less favoured food (Juškaitis 1993).

In Lithuania, when the first common dormice emerge from hibernation in early April, vegetable food, such as buds and catkins, is already available in forests (Juškaitis 1993). Hazel (*Corylus avellana*) flowers very early, and its catkins can be consumed by early emerged dormice (Likhachev 1971; Juškaitis 1993). At the end of April, dormice may eat catkins of aspen (*Populus tremula*) and willow (*Salix* sp.) as well as buds of willow and raspberry (*Rubus idaeus*) as they willingly did in captivity. In May, captive dormice ate inflorescences of oak (*Quercus robur*), ash (*Fraxinus excelsior*), maple (*Acer platanoides*) and catkins of birch (*Betula* sp.) (Juškaitis 1993).

By the time common dormice had emerged from hibernation in England, in late April or early May, many tree catkins were already over (Bright & Morris 2005). However, hawthorn (*Crataegus monogyna*) was in flower, and dormice typically sought out its flowers, choosing those in which pollen was well developed, but not yet mature or depleted by wind or rain (Bright & Morris 1993). Captive dormice tended to select immature flowers (Richards *et al.* 1984). When flowers of hawthorn were over, dormice moved to those of other plants such as oak (*Quercus* spp.), sycamore (*Acer*

pseudoplatanus), broom (*Sarothamnus scoparius*), honeysuckle (*Lonicera periclymenium*), and sweet chestnut (*Castanea sativa*) (Bright & Morris 1993, 1996). Direct observations suggested that dormice eat only the most nutritious parts of flowers such as honeysuckle nectaries and hawthorn anthers. Tree utilization by dormice closely followed tree flowering and fruiting phenology and perhaps insect availability on sycamore and oak (Bright & Morris 1993).

The coat of pollen grains is relatively resistant to decay (More & Webb 1978, cit. after Richards *et al.* 1984), and undigested pollen can be found in dormouse faeces. In Lithuania, yellow dormouse faeces, containing pollen, were often found in nestboxes in May (Ulevičius & Juškaitis 2005). Pollen found in them was from the Norway spruce (*Picea abies*), strobiles of which were preferred food of the common dormice in this period (Juškaitis, unpubl.). In Central Italy, radio-tagged dormice were registered in pine trees, where, most probably, they fed on strobiles of pine (F. Panchetti, pers. comm.). Dormice also consumed male cones of conifers in Britain (P. Rudlin, pers. comm. in Eden & Eden 2001). In faeces sampled in May, pollen was predominantly from species of Rosaceae and could have been either from bramble (*Rubus fruticosus*) or rowan (*Sorbus aucuparia*), both of which were present in the dormouse habitat in south Devon (Richards *et al.* 1984). Large concentrations of both wild garlic (*Alium ursinum*) and oak pollen were found in one sample (Richards *et al.* 1984).

In faecal samples collected during May, about half of the items recorded were plant epidermis, predominantly from honeysuckle leaves (Richards *et al.* 1984). However, according to Bright and Morris (1993), they may also have been pieces of flowers. Captive dormice ate leafstalks and central parts of fresh leaves of hazel, aspen, bird cherry (*Padus* sp.), leafstalks of lime (*Tilia* sp.) (Likhachev 1971). Leaves and young shoots of aspen were also among preferred foods of captive dormice in Lithuania (Juškaitis 1993). In the Carpathians, common dormice ate young needles and gnawed buds on tops of young spruce (*Picea* sp.) trees (Sokur 1952, cit. after Airapetyants 1983).

According to Likhachev (1971), acorns of oak, lying in the forest litter layer from the previous autumn, were an important food source for common dormice in the Moscow and Tula regions in spring. In Lithuania, the dormouse ate acorns, which had been stored for winter during the previous autumn in a nestbox by yellow-necked mice (*Apodemus flavicollis*) (Juškaitis, unpubl.). Additionally, in spring dormice may consume nuts of hazel and beech (*Fagus sylvaticus*) of the preceding year (Lozan 1970; Likhachev 1972; Airapetyants 1983).

In spring, common dormice may also feed on food of animal origin such as adult insects and bird eggs. The most frequent insect remains, found in dormouse faeces, were wing scales of adult Lepidoptera; fragments of other insects were also found (Richards *et al.* 1984). When occupying nestboxes for birds, dormice ate bird eggs, especially those of the pied flycatcher (*Ficedula hypoleuca*) (e.g. Schulze 1973, 1986; Juškaitis 1995, 2006; Vaughan 2001; Henze & Gepp 2004). Eggs of other hole-nesting birds, such as tits (*Parus* spp.), Robins (*Erithacus rubecula*) etc. were consumed also (e.g. Juškaitis 1995, 2006; Gatter & Schütt 1999; Eden & Eden 2001).

1. 2. Feeding by the dormouse in summer

In early and mid-summer, when flowers are over and fruits are not ripe yet, the common dormouse is likely to suffer from the plant food shortage (Bright & Morris 1993, 2005; Juškaitis 1993). At this time, insects (aphids and caterpillars) are particularly abundant, especially on sycamore and oak. Insect consumption by dormice has been observed directly in the field (Bright & Morris 1996) and also inferred from radio-tracking studies (Bright & Morris 1993). In June, insect remains (larval Lepidoptera and aphids) dominated the contents of faecal samples, and comprised 70% of the dormouse diet (Richards *et al.* 1984). Plant foods, eaten by dormice in this period included flowers of honeysuckle (only the proximal 5–10 mm of flower corolla tubes) and bramble (Bright & Morris 1993, 2005).

In Slovakia, common dormice consumed both food of animal origin (insects, chiefly larvae, less frequently molluscs and earthworms) and vegetable food (leaves of spindle tree (*Euonymus verrucosa*), rarely bark, buds and flowers) at the beginning of summer. Both these components occupied about the same volume of the stomach contents (Holišová 1968).

In late summer, soft mast (berries) and hard mast (nuts and winged seeds) become increasingly abundant in dormouse habitats (Bright & Morris 1996). In the Alps, common dormice used to appear in overgrown clearings at the end of June, when strawberries (*Fragaria vesca*) had ripened; later they fed on berries of raspberry and bramble. Dormice used to disappear from places, where bramble fruits (blackberries) were no longer available (Wachtendorf 1951). During summer, dormice also consumed berries and fruits of bilberry (*Vaccinium myrtillus*), hawthorn, wild sweet cherry (*Cerasus avium*), and rowan (*Sorbus aucuparia*) (Likhachev 1971, 1972; Airapetyants 1983). In Lithuania, berries of honeysuckle (*Lonicera xylosteum*) and glossy buckthorn (*Frangula alnus*) were a favourable food for dormice in this period (Juškaitis 1993).

In southern England, dormice fed on soft mast (e.g. yew (*Taxus baccata*), bramble and wayfaring tree (*Viburnum lantana*) in this period (Bright & Morris 1996). Insects, mostly aphids, still constituted a significant part of faecal samples in August (Richards *et al.* 1984). Although dormice always preferred berries to vegetative parts of plants, green leaves of honeysuckle made up a significant share of faeces examined during mid summer (Richards *et al.* 1984). In Lithuania, captive dormice also ate young shoots and leaves of glossy buckthorn (Juškaitis 1993).

In different regions, hazelnuts became the favourite dormouse food in late summer (Formozov 1925; Likhachev 1971, 1972; Airapetyants 1983; Bright & Morris 1993; Juškaitis 1993). Dormice started to feed on hazelnuts when these were only partly ripe and continued to consume the nuts that were ripe, but still on the trees (Bright & Morris 1993, 1996, 2005). Dormice were active in the canopy, where they could be seen and heard at dusk, eating nuts and dropping the opened shells onto the ground (Richards *et al.* 1984; Bright & Morris 1993).

1. 3. Feeding by dormice in autumn – a period of preparation for hibernation

Autumn is a period for common dormice to prepare for hibernation by accumulating fat reserves (Likhachev 1967; Juškaitis 2001). Hazelnuts, if they are available, are the principal source of food used for fattening up in autumn (Bright & Morris 1996, 2005; Bright *et al.* 2006). Hazelnut kernels have the highest calorific value among European tree seeds that constitute potential food for small mammals (Grodzinski & Sawicka-Kapusta 1970). However, dormice also live in habitats without hazel or in habitats where the importance of hazel as a food source for these animals is limited because good hazel crops occur only every few years (Juškaitis 2007).

Many alternative food sources may be present in dormouse habitats in autumn. During radio-tracking studies in September and October, berries of bramble as well as shrivelled bramble seed heads were an important food source for dormice (Bright & Morris 1993). Blackthorn (*Prunus spinosa*) fruits were seen being eaten. Radio-tagged dormice were also found in sweet chestnut, oak, maple and holly (*Ilex angustifolium*), presumably consuming the fruits, which were available by then (Bright & Morris 1993). Dormice also made use of hornbeam (*Carpinus* sp.) and birch seeds, which because of their small size, were suboptimal foods for dormice in comparison with hazelnuts (Bright & Morris 1996). Although dormice preferred hazelnuts and soft mast (e.g. yew, bramble, wayfaring tree)

and appeared to feed little on most hard mast such as keys of ash, field maple or sycamore (Bright & Morris 1993), these food sources may be used when hazelnuts and soft mast are scarce or absent in autumn. Captive dormice willingly ate fruits of glossy buckthorn, hawthorn, wayfaring tree and rowan, acorns of oak, all of which may be present in Lithuanian forests in September (Juškaitis 1993). For late-born juveniles, berries of glossy buckthorn, which were present in the forest in October, were very important. Successful weight gain in these juveniles depended on the availability of glossy buckthorn berries in the habitat (Juškaitis 2003). Likhachev (1967) stressed the importance of good oak acorn crops for dormouse fattening before hibernation.

In coastal scrub in Devon, common dormice were found to be active and rapidly gaining weight until mid November, a month after a reasonable supply of blackberries had depleted (Eden & Eden 2001). Weight gains showed that good food was accessible to dormice even after blackberries and other fruits were over. Coastal scrub is very rich in insect life until mid November, and insects might be a food source for dormice in this period (Eden & Eden 2001). Kernels of blackthorn stones were among the foods found to be eaten by dormice at this time. Dormice were able to open hard stones and did this in as diagnostic a way as they open hazelnuts (Eden & Eden 2003). Another possible source of food was winter buds on bushes. During the first two nights in captivity, two young dormice stripped off all the buds from the apple (*Malus domestica*), and hawthorn twigs provided for them to climb on (Eden & Eden 2003). In Lithuania, a captive dormouse ate catkins of hazel in early October (Juškaitis, unpubl.). Common dormice live in completely different natural conditions in the Mediterranean ecosystems, where highly palatable and energetic food (e.g. oak acorns, berries of holly and bramble, hazelnuts, sweet chestnuts, fruits of wild pear etc.) is available almost exclusively during autumn and winter (Sarà *et al.* 2001).

2. Contradictory opinions on feeding by the common dormouse

2. 1. Dormouse feeding on food of animal origin

It has been mentioned above that opinions on the consumption of food of animal origin by the common dormouse are contradictory. Likhachev (1971) affirmed that dormice do not feed on insects, at least in the Moscow and Tula regions. He found two pieces of beetle chitin in a dormouse stomach, but concluded that animals would ingest insects only accidentally, while consuming vegetable food (Likhachev 1971). According to Airapetyants (1983), dormice did not eat meal-

worms, chrysalids of butterflies or bird eggs in captivity. In several feeding experiments, captive dormice did not eat food of animal origin (e.g. bird eggs in Lukshevich (1981), mealworms (*Tenebrio* sp.) in Vogel (1997), when suitable sustaining vegetable food was available. Meanwhile, Eden and Eden (2001) presented many examples of dormouse feeding on insects in captivity.

According to Eden and Eden (2001), insects are an essential part of the dormouse diet, because very few habitats, including most woods where dormice occur, can provide anything like a continuous succession of flowers and fruits. In many habitats (e.g. recently laid hedges, oak high forests, conifer plantations), insects must of necessity form an important constituent of the common dormouse food for much of the year. Eden and Eden (2001) assume that the large insect biomass of hazel may explain the apparent predilection of the common dormouse for this plant even better than nuts, which are available only for a relatively short period of time each year.

Rossolimo *et al.* (2001), quoting other authors (Uspenskij & Lozan 1961; Yezerkas 1961), wrote that common dormice often ate bird eggs and nestlings and sometimes attacked even nesting adult birds in nestboxes. Perhaps killing and eating of nestlings by the common dormouse (e.g. Gatter & Schütt 1999; Sarà *et al.* 2005) occurs only in very exceptional cases. In most cases, such events attributed to the common dormouse (e.g. Uspenskij & Lozan 1961; Yezerkas 1961; Lozan 1970; Lozan *et al.* 1990; Gvozdak & Simochko 1971) could have been performed by other animals occupying nestboxes (for example, by other dormouse species or *Apodemus* mice).

Several authors have reported destruction and eating of bird eggs by the common dormouse in nestboxes (Mansfeld 1942; Štrauss 1959; Schulze 1973, 1986; Juškaitis 1995, 2006; Vaughan 2001). However, Likhachev (1971) and Airapetyants (1983) expressed doubts, whether common dormice really eat bird eggs, and several researchers affirmed that dormice do not eat bird eggs in captivity (Likhachev 1971; Lukshevich 1981; Airapetyants 1983; P. Vogel, pers. comm.). It is possible that common dormice did not eat bird eggs in captivity for the following two reasons: 1) suitable high-quality vegetable food was also available; 2) dormice had not learnt by experience that eggs were edible and could be consumed as a food source.

In the opinion of Gatter and Schütt (1999), dormice probably need first to learn that eggs contain suitable food inside. For example, it took an injured dormouse from the coastal scrub, where hazel was absent, several nights to realise that hazelnuts were food, even

though the nuts were shelled (Eden & Eden 2001). A young overwintered female started eating eggs of tits in captivity only on the third night after one egg had been broken. Later it ate unbroken eggs of tits very readily as well as hazelnut kernels and oak flowers presented together with eggs, all this food being in surplus (Juškaitis 2006).

In the wild, consumption of bird eggs by common dormice coincides with the period of decrease in suitable plant food during late spring and early summer. This was related to an increased share of insects in the diet of the common dormouse (Richards *et al.* 1984; Bright & Morris 1993, 1996, 2005). Müller-Stieß (1996) hypothesized that the increased consumption of food of animal origin by dormice may be also related to the reproduction period, particularly to feeding of juveniles.

2. 2. Dormouse feeding on acorns

Feeding by common dormice on acorns (seeds of genus *Quercus*) is another issue regarding which opinions of different authors are contradictory. Bright and Morris (1993, 1996) inferred that dormice would not benefit from acorns, despite their abundance in British woodland. Acorns may be of limited nutritional value to dormice because their high tannin content makes them difficult to digest. If acorns were eaten by dormice, it was perhaps because of scarcity of other food (Bright & Morris 1993). In a feeding experiment carried out before hibernation, captive dormice did not eat acorns preferring hazelnuts, walnuts (open), sunflower seeds and pear (Vogel 1997).

A diet of acorns alone had negative effects on rodents, e.g. on Japanese wood mouse (*Apodemus speciosus*) (Shimada & Saitoh 2003) and red squirrel (*Sciurus vulgaris*) (Kenward & Holm 1989, cit. after Bright & Morris 1996). However, Japanese wood mice overcome the negative effects of acorn tannins in the field by some physiological or behavioral mechanisms (Shimada & Saitoh 2003) as many other rodent species do. In oak mast years, yellow-necked mice hoarded large amounts of acorns in nestboxes and consumed them later (Juškaitis 1999; Ulevičius & Juškaitis 2005). In the Białoveża forest, abundance dynamics of the yellow-necked mouse was related to the oak mast crop (Pucek *et al.* 1993).

In all Russian publications containing data on feeding by the common dormouse, oak acorns are indicated as a very important component of the dormouse diet (e.g. Lozan 1970; Likhachev 1971; Airapetyants 1983). According to Lozan (1970), acorns of oak were the most important permanent food source for dormice in Moldova, nuts of beech and hazel being only of secondary importance. Likhachev (1967) correlated fat-

tening of the common dormouse before hibernation with good oak crops, and reported the dormouse feeding on acorns of the previous year in the following spring. Captive dormice also ate large amounts of acorns (Likhachev 1971).

The feeding experiment carried out by Lukshevich (1981) in Latvia showed that during the pre-hibernation period dormice willingly ate both hazelnuts and oak acorns. One adult male used to eat 2–6 (average 3.9) acorns per day. Another experiment with captive dormice carried out in Lithuania (Juškaitis 1993) proved that acorns were among the most-liked food items in the same period. In Central Italy and Sicily, acorns were also a food resource for common dormice in the winter period, during which animals were active (Sarà *et al.* 2001; Panchetti *et al.* 2005).

It seems, that the common dormouse does not relish acorns, when another high-quality food is available, e.g. in the experiment by Vogel (1997). However, many other publications cited above show that this food source may be of importance to these rodents.

2. 3. Dormouse feeding on seeds of berries and ripe hazelnuts

Airapetyants (1983) pointed out that common dormice preferred feeding on plant seeds. However, it seems that until now nobody has paid special attention to the question as to which parts of fruits and berries exactly dormice eat. The few published observations on this topic are contradictory. For example, direct observations suggested that dormice eat only wayfaring tree seeds, but not exosta (Bright & Morris 1993). According to Airapetyants (1983), captive dormice ate both seeds and pulp of wayfaring tree fruits, but only stones of bird cherry fruits.

Captive dormice did not eat the endoderm from berry seeds and utilized only the flesh; however, many faecal samples contained whole bramble seeds (Richards *et al.* 1984). Seeds of raspberries were detected in faeces of the common dormice found in nestboxes in Lithuania (Juškaitis, unpubl.). However, according to Eden and Eden (2001), a captive dormouse opened all the blackberry pips to get at the seeds. Probably, dormice ingest small seeds of berries together with the flesh, but gnaw and consume larger seeds of fruits. Feeding in captivity may also differ from feeding in the wild.

Many researchers (Likhachev 1971; Lukshevich 1981, Airapetyants 1983) stressed that kernels of ripe hazelnuts with hard shell are inaccessible to the common dormouse. However, it seems this applies only to young-of-the-year dormice, especially to juveniles born in late summer. Captive adult dormice managed to gnaw even hard shells of ripe hazelnuts and reached kernels

(Juškaitis, unpubl.). Meanwhile, juveniles need to learn how to gnaw even unripe hazelnuts. The ability of young dormice to open hard stones of blackthorn also disproves the belief that dormice can open hazelnuts only if they are not fully ripe (Eden & Eden 2003).

2. 4. Hoarding of food supplies by the common dormouse

Formozov (1925) found eight oak acorns inside the nest of a common dormouse and concluded that dormice accumulate food supplies for spring. Yezerskas (1961) attributed large amounts of acorns (up to 400 acorns) found in nestboxes to the common dormouse. Lukshevich (1981) attributed a supply of seeds of glossy buckthorn found in a tree hollow to this species, because the dormouse nest was found nearby. Similar conclusions were made by Lozan (1970), who found small amounts of seeds (3–5 acorns or 10–15 nuts of beech) in nestboxes in January. Rossolimo *et al.* (2001) summarised these suppositions and stated that common dormice hoard small supplies of oak acorns and hazelnuts, which they use in spring after hibernation.

However, other dormouse researchers (Likhachev 1971; Airapetyants 1983) argue that common dormice do not hoard any food supplies, and acorns found in dormouse nests and nestboxes may belong to the yellow-necked mice. These food supplies were often hoarded in late autumn, when dormice were already hibernating. Studies carried out in Lithuania (Juškaitis 1993, 1999; Ulevičius & Juškaitis 2005) confirmed the latter state-

ment: yellow-necked mice used to carry acorns into nests of the common dormouse.

CONCLUSIONS

The extensive review of feeding habits of the common dormouse presented in this paper is summarised in Table 1. However, division of the dormouse food into three categories (especially into preferred and common food) should be regarded as the author's subjective opinion. This subjectivity is determined by the absence of quantitative criteria, scarcity of some published data and regional differences.

Feeding by the common dormouse has been investigated quite well only in some optimal habitats in southern England, where dormice have access to diverse and continuous vegetable food during almost all their activity season, except early summer (Richards *et al.* 1984; Bright & Morris 1993, 1996, 2005). Feeding by this species has not been investigated in conifer-dominated and other suboptimal habitats. Only feeding on food of animal origin could explain how common dormice can survive in suboptimal habitats with low diversity of nutritional plants such as e.g. pure dwarf pine (*Pinus mugo*) stand situated at about 1,600 m a.s.l. (Miklós & Buchamerová 2003), high oak forest almost without understorey (Vaughan 2001), conifer plantations (Chanin & Woods 2003; Rudlin 2000) and other untypical habitats. It is supposed that dormice exploit

Table 1. Food preferences of the common dormouse in different seasons (according to the sources indicated in the text of the present paper; except the Mediterranean region).

Preferred food	Common food	Other possible food
	Spring (April–May)	
Flowers of hawthorn, honeysuckle, oak etc.; catkins of aspen, birch etc.; strobiles of coniferous trees; bird eggs	Flower-buds and flowers of trees and shrubs; adult insects; acorns of oak of the preceding year	Leaf-buds; young leaves and shoots; nuts of hazel and beech of the preceding year
	Summer (June–August)	
Insects (aphids and caterpillars); flowers of honeysuckle, bramble; berries and fruits of bramble, raspberry, honeysuckle, glossy buckthorn etc.; hazelnuts	Berries and fruits of strawberry, bilberry, hawthorn etc.	Vegetative parts of some plants, e.g. honeysuckle, spindle tree
	Autumn (September–November)	
Hazelnuts; berries and fruits of bramble, glossy buckthorn etc.	Fruits of hawthorn, rowan, blackthorn etc.; acorns of oak; seeds of ash, maple, sycamore etc.	Seeds of hornbeam and birch; winter buds and catkins of trees and shrubs; insects

large numbers of aphids that some conifers provide or they may also consume sap (Bright & Morris 2005). To summarise, it is necessary to state that feeding by the common dormouse has been studied insufficiently. Further studies are necessary, especially in conifer-dominated and other suboptimal habitats, which do not offer a continuous and suitable vegetable food supply for dormice during their activity season.

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LAZDYNINĖS MIEGAPELĖS (*MUSCARDINUS AVELLANARIUS*) MITYBOS APŽVALGA

R. Juškaitis

SANTRAUKA

Lazdyninė miegapelė (*Muscardinus avellanarius*) maitinasi tiek augalinės, tiek ir gyvulinės kilmės maistu. Miegapelės mityba varijuoja priklausomai nuo metų laiko, o taip pat priklauso nuo geografinės platumos ir esamų mitybinių augalų. Pagrindinis augalinis maistas pavasarį yra augalų žiedai, vasarą – uogos, rudenį – riešutai ir sultingi vaisiai, tačiau miegapelės naudoja ir daug kitų maisto šaltinių. Tarp augalinio maisto pirmenybė visada teikiama generatyvinėms augalų dalims (žiedpumpuriai, žiedai, žiedynai, uogos, sėklos), tuo tarpu vegetatyvinės dalys (lapiniai pumpurai, lapai, ūgliai) yra antraeilis maistas. Ažuolo gilės gali būti svarbus maisto šaltinis miegapelėms, nepaisant to, kad jų sudėtyje yra taninų. Trūkstant tinkamo augalinio maisto (pavyzdžiui, pavasario pabaigoje ir vasaros pradžioje), miegapelės minta gyvulinės kilmės maistu, visų pirma vabzdžiais, o taip pat paukščių kiaušiniiais. Mityba gyvulinės kilmės maistu gali būti labiau svarbi suboptimaliose buveinėse su maža mitybinių augalų įvairove. Kai kurią lazdyninėms miegapelėms priskiriamą mitybinę veiklą (maitinimasis paukščių jaunikiiais ar net suaugusiais paukščiais, maisto atsargų kaupimas) iš tikrųjų vykdo kiti gyvūnai (kitų rūšių miegapelės, *Apodemus* genties pelės).

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