

РЕЗЮМЕТА НА НАУЧНИТЕ ТРУДОВЕ

НА ГЛ. АС. Д-Р ЕВГЕНИЙ ГЕОРГИЕВ РАЙЧЕВ

Представени за участие в конкурс за „Доцент“ по научна специалност
„Специални отрасли (Промислен дивеч)“ област на Висше образование 6.
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1. Димова Т., Д. Димитров, Е. Райчев, Р. Димитров, (1999). Възрастови структурни особености на *os penis* при червената лисица (*Vulpes vulpes*) – предварително съобщение. Съюз на учените в България, Съвременни тенденции в развитието на фундаменталните и приложните науки, том I, Животновъдство, растениевъдство и ветеринарна медицина: 418-422.

ABSTRACT

Macromorphometrical and histological study of the os penis in Red fox is presented. Used material includes 53 male wild red foxes in 4 age classes. Structural characteristics of the bone are age determined.

2. Димитров Р., Д. Влагова, П. Йонкова, Т. Димова, Е. Райчев, (2003). Основни краниометрични показатели при бялката (*Martes foina*).I. Средни стойности и вариации. Животновъдни науки, 1-2, 94-97.



3. Kirkova Z., D. Georgieva, **E. Raychev, (2006)**. Study on the prevalence of trichurosis in different categories of dogs and wild carnivores. *Bulgarian Journal of Veterinary Medicine*, 9, №2, 141-147.

Summary

In the period between 2003 and 2005, the prevalence of trichurosis in various categories of dogs and wild carnivores was studied. To this end, 508 coprological samples from dogs aged from 6 months to 14 years from different populated areas in North-east, Central, and South Bulgaria were studied using the flotation method of Fuleborn. Partial helminthological autopsies of the large intestine were performed in 113 foxes and 56 jackals.

Trichuris vulpis infection was found in all studied categories of dogs. The highest extensity of infection was observed in hunting dogs (30%), followed by dogs used as guards of village yards (21.8%), dogs bred in kennels (9%), and home pets (6%).

In the studied wild carnivores, *T. vulpis* infestation was found in 30.7% of the jackals, and in 12.2% of the foxes.

The results showed that trichurosis is one of the commonest intestinal helminthoses in dogs and jackals.

4. **Райчев Е., Д. Георгиев, (2008)**. Орнитофауната на Лесопарк „Митрополит Методий Кусев” („Аязмото”) град Стара Загора. *Екология и бъдеще*, год. VII, №3, 38-42.

Abstract

The aim of the study is to establish species diversity and distribution of the birds in the "Metropolitan Methodii Kusev" ("Ayazmoto") Forest park in Stara Zagora. Studies are based on authors observations for four years period. Purposefully observations were carried out from September 2005 – September 2006.

They were established 40 bird, s species from 34 genuses, 22 families, 11 orders, which presents 10 % from of reported bird, s species for Bulgaria. Passeriformes are most numerous. *Turdus merula*, *Eritacus rubecula*, *Parus major*, *Fringilla coelebs*, *Pica pica* dominate in the park. Most of the species require presents of bushe trees used for nesting and sheltering.

They are given recommendations for the tipe of felling, necessity of placing, nesting and feeding places and prevention against pasture.

5. Георгиев Д., **Е. Райчев**, К. Колева, (2008). Европейският лалугер (*Spermophilus citellus*, Rodentia, Mammalia) в условията на Казанлъшкото поле. *Екология и бъдеще*, год.VII, 2, 63-66.



Abstract

The colony of *S. citellus* from the region of Dabovo, was examined in 2005-2006. The purpose of the present investigation, was to determinate dependence the density of the colony of enviromental factors. Density data were compared with patterns of enviromental factors and vegetation water content. Two high values in the number of the ground squirrels open burrows were recorded: in May (275/138) and in July (469/182). They correspond to high values of the mean annual precipitation in the region under study –88.8 mm/m² and 159.3 mm/m², respectively.

6. Георгиев Д., Е. Райчев, Д. Димитров, М. Вълчев, М. Маринова, (2008). Динамика на морфологични и физиологични показатели на кръвта при пепелянка- *Vipera ammodytes* (Linnaeus, 1758) и пъстър смук- *Elaphe quatuorlineata* (Pallas, 1814) В: Сборник Научни трудове на Съюз на учените Стара Загора – Научна конференция с международно участие «Стара Загора» 5-6 .06. 2008, 34 – 39.

SUMMARY

Traceable is in blood dynamics parameters of two snakes *Vipera ammodytes* and *Elaphe sauromates* depending on diet. It has been an increase in the percentage of small lymphocytes in colorful snake ($p < 0,05$) and viper ($p < 0001$) after feeding. Reliable differences were observed in the participation of azurophilic leukocytes before and after meals in *E. sauromates* ($p < 0,01$).

7. Райчев Е., Д. Георгиев, (2008). Храната на лисицата (*Vulpes vulpes* L.) през есенно-зимния сезон в района на Сърнена Средна гора . В: Сборник с доклади - Юбилейна научна конференция по екология, Пловдив, 208 – 215.

Abstract. Based on the stomach contents of 140 foxes we studied the winter feeding of the red fox in Sarnena Sredna Gora Mt.

The trophic spectrum for the study period includes 24 animal and 2 plant species. The main type of food of the red fox is the mice rodents – 50% to 84% frequency of occurrence in the full stomachs, respectively. During the autumn-winter season of 2004-2005 the red fox reacted to the abundance of rodents by means of shrinking it trophic niche breadth ($Ba = 0.33$; $Ba = 0.13$) and ignoring the additional food resources. As a result of our study we partly confirmed the “Alternative food hypothesis” for the red fox in the region of Sarnena Sredna Gora Mt.

8. Райчев Е., Д. Георгиев, (2009). Хранителни навици на дивата котка *Felis Silvestris* Schr. в Сърнена Средна гора. Екология и бъдеще, год. VIII, №3, 33 - 36.



Abstract

A feeding spectrum of the wildcat (*Felis silvestris*) in autumn-winter season was studied in a region of Sarnena Sredna Gora. These are not so high mountains (to 800 m altitude), situated south of Balkan Mountains.

Percentage of occurrence of different kind of prey was examined in a stomach of 42 wildcats. The animals were collected by different ways of hunting. In first investigated period (1990-1991 and 1991-1992) feeding spectrum included – Mammalia, Aves, Oligochaeta and Reptilia. Rodents were presented as 56% of occurrence. In second period (2004-2005) all the wildcats consumed only rodents (100%).

In Sarnena Sredna Gora wildcat behaves as rodent specialist predator. It's feeding spectrum includes alternative prey as birds dead wild and domestic mammals and earthworms. Wildcat can be characterized as a facultative specialist based on small rodents.

9. Georgiev D., E. Raichev, (2009). A record of Horned viper *Vipera ammodytes* (L.) in the diet of the Stone marten *Martes foina* (Erxl.). *ZooNotes*, 5: 1-2.

Abstract. Among undigested prey remains in Stone marten's *Martes foina* (Erxl.) faeces (n=47), collected in Sakar Mountain (near Sladun Village) a single lower jaw from a Horned viper (*Vipera ammodytes*) was found. The rest of taxa registered in the Rock marten's diet among the faeces were: Insecta indet., *Lacerta* sp., *Pseudopus apodus*, Aves indet., *Dryomys nitedula*, *Sylvia* sp., *Arvicola terrestris*, *Microtus* sp., and fruits of *Rosa* sp., *Rubus* sp., and *Pyrus* sp. The percent frequency of the main prey groups in the faeces were as follows: Mammalia (n=35, 74.5%), Aves (n=16, 34.0%), Reptilia (n=4, 8.5%), Insecta (n=4, 8.5%), and fruits (n=5, 10.6%).

10. Georgiev D., E. Raichev, M. Marinova, D. Dimitrov, (2009). Impact study nutrition and diet on morphological and physiological indicators of blood in *Vipera ammodytes* (Linnaeus, 1758) and *Elaphe sauromates* (Pallas, 1814). Proceedings IV Balkan conference of Animal Science BALNIMALCON 2009. Challenges of the Balkan Animal Industry and the role of science and cooperation. 14-16 May 2009, 293-296.

SUMMARY

Traceable is in blood dynamics parameters of two snakes *Vipera ammodytes* and *Elaphe sauromates* depending on diet. It has been an increase in the percentage of small lymphocytes in colorful snake ($p < 0,05$) and viper ($p < 0001$) after feeding. Reliable differences were observed in the participation of azurophilic leukocytes before and after meals in *E. sauromates* ($p < 0,01$).



11. Nikolov G., A. Atanasov, D. Georgiev, **E. Raichev, (2010)**. Analysis of the Plankton in the Area around the Cape Maslen Nos, Bulgaria: Possibilities for Cultivation of Mediterranean Mussels (*Mytilus galloprovincialis*). *Ecologia Balkanica*, vol.2, 15-18.

Abstract. The aim of the study was to establish the species taxonomic composition and the quantitative characteristics of plankton in the Cape Maslen Nos area. Representatives of the Protozoa, Rotatoria, Annelida, Mollusca and Arthropoda predominated in the composition structure of zooplankton whereas members of Bacillariophyta, Chrysophyta, Dinophyta, Cyanophyta, Euglenophyta in that of phytoplankton. The comparative analysis of phytoplankton data shows that the highest mean biomass values were 24.76 – 33.33 g/m³ and mean biomass values of zooplankton – 51.43 g/m³.

12. **Raichev E., (2010)**. Adaptability to locomotion on snow conditions of fox, jackal, wild cat, badger in the region of Sredna gora, Bulgaria. *Trakia Journal of Sciences*, vol.8, suppl. 2, pp 499-505.

ABSTRACT

Terrestrial carnivores occupying the region of Sredna Gora (Bulgaria) may experience reduced fitness through the deleterious effect of snow on locomotion, energy expenditure and food acquisition. Selection may favour mammals possessing lower foot load (body mass / food surface area).

The most common predators for Sredna Gora were the objects of our study. It was conducted during the autumn-winter seasons from 2005 to 2009 and based on carcasses of 19 foxes (*Vulpes vulpes*), 9 jackals (*Canis aureus*), 8 badgers (*Meles meles*) and 7 wild cats (*Felis silvestris*). Two methods have been used to measure foot surface: taking footprints and direct measuring of front and hind feet. The medium body mass of each species obtained for the region was divided by the foot surface and expressed in g/sm².

Red fox is the best adapted mammal to snow conditions. Wild cat possesses a little more footload but is also well adapted to catch prey in winter.

The strangest footload of jackal produces deleterious effect on preying rodents. Difficulties in locomotion (fitness) in snow of badgers vary greatly with changes in individual weight but are non essential for survival during the winter.

13. Atanasov A., N. Rusenova, Y. Staykov, G. Nikolov, A. Pavlov, D. Stratev, **E. Raichev, (2011)**. Chemical surface disinfection of funnel type fish egg incubators. *Agricultural Science and Technology*, vol.3, №3, pp. 281-284.

Abstract. Different procedures and disinfectants are currently used to disinfect in aquaculture for preventing transmission of diseases and reducing problems with bacterial overgrowth in intensive egg incubation systems. The effect of two disinfectants and one anionic detergent on fish egg incubator funnel type was investigated. The fish egg incubators were disinfected for 20 min using various concentrations of glutaraldehyde (10000 mg L⁻¹), sodium percarbonate (25000 mg L⁻¹) and detergent surfactant (20000 mg L⁻¹). Bactericidal effect of disinfection, survival of hatching and hatching success were assessed. Effective disinfection was also recorded using apparatus Hy-lite2®Merck. Disinfection had a highly positive effect on the viability of yolk-sac larvae. Because of the low effect of sodium percarbonate and anionic detergent, glutaraldehyde is recommended for routine disinfection of fish egg incubator surface.

14. **Raichev E., (2011).** Effect of shooting on the structure of population of golden jackal (*Canis aureus* L.) in Sarnena Sredna Gora mountain. *Agricultural Science and Technology*, vol.3, №3, pp. 276-280.

Abstract. Being a protected species in the middle of the last century with rather limited distribution in our country, the jackal has become a widely spread species. The aim of the study was to investigate the effect of shooting on the jackal population and to reveal how its demographic structure changes, specimens from which age groups are taken out and how the gender ratio changes with age. The study material comprises 210 jackal skulls shot during 4 autumn-winter hunting seasons from 2006 to 2010 in the area of Sarnena Sredna gora mountain. To determine the animals' age year rings in the dentine have been observed by a stereoscope measuring the level of tearing upper incisors and observing the closing of basal skull synchondroses. The simultaneous use of the three methods facilitates the more precise determination of age and assigning samples to 4 age groups. Of all animals shot during the four hunting seasons 67,5 % are young ones, aged up to 1 year. The gender ratio in these groups is 2,28/1 in favour of male animals. The ratio in the two-year-old jackal population is 1,25/1 in favour of the female ones, i.e. restoration of the normal gender ratio is observed typical of most carnivorous mammals in sexual maturity. As a result of the hunting pressure only 1/ of the animals in each age group survive by the following hunting season. The demographic structure of the jackal population in 3 Sarnena Sredna Gora mountain is strongly influenced by hunting, turnover is increased, but the effect of shooting is not enough to reduce the overall number. Jackal population is restored each year by compensation mechanisms such as migration, immigration, enhanced reproduction.

15. Kirkova Z., **E. Raychev**, D. Georgieva, (2011). Studies on Feeding Habits and Parasitological Status of Red Fox, Golden Jackal, Wild Cat and Stone Marten in Sredna Gora, Bulgaria. *Journal of Life Sciences* 5, 264-270.

Abstract: In order to define the role of wild carnivores in the epidemiology of parasitoses with veterinary and medical importance their parasitological status and feeding habits were studied. In the period 2001-2006 the feeding habits of 167 foxes, 78 jackals, 40 wild cats and 23 stone martens from the area of Sredna Gora, Bulgaria were investigated. 113 of the foxes, 56 of the jackals, 22 of the wild cats and 21 of the martens were subjected to helminthological study. 147 wild boars and 26 badgers from the same area were subjected to trichinelloscopy. Rodents were the main food of the wild cats (82.7%), martens (52%) and foxes (50%). The main food of the jackals was carrion from domestic and wild animals (79.5%). 95.5% of the foxes, 100% of the jackals, 95.5% of the wild cats and 89% of the stone martens were infected with one or more helminth species. The prevalence of the most important helminths: *Trichinella* spp., *Taenia* spp. and *Ancylostoma* spp. was high in all carnivores examined. In the infected with *Trichinella* spp. Animals only *T. britovi* was demonstrated. The wild boars and badgers were not infected with *Trichinella* spp. The correlation between the feeding habits and parasitological status is discussed.

16. **Raichev E.**, D. Georgiev, D. Georgiev, (2012). Hunters' attitude to some protected mammals and birds in Bulgaria. *Trakia Journal of Sciences*, Vol. 10, №2, pp. 48-51.

ABSTRACT

Hunters appear to be the connection between law and wildlife. The aim of the study was to reveal how hunters approach their duties and responsibilities concerning protection of mammals and birds.

Questionary survey was carried out on 124 hunters, members of "Hunters and anglers societies" in the towns of Varna, Stara Zagora and Plovdiv. Our survey concern: buzzard (*Buteo buteo*), longlegged buzzard (*B. rufinus*), rough-legged buzzard (*B. lagopus*), goshawk (*Accipiter gentilis*), eagles (*Aquila* spp), Hrriers (*Circus* spp.), Falcons (*Falco* spp.), geese - *Anser erythropus*, *A. faballis*, *A. anser*, *Branta ruficollis*, cormorants - *Phalacrocorax carbo* and *Haliastur pygmeus*, great white egret (*Egretta alba*), little egret (*E. garzetta*), purple heron (*Ardea purpurea*), grey heron (*A. cinenea*), otter (*Lutra lutra*), weasel (*Mustela nivalis*), badger (*Meles meles*), roe deer (*Capreolus capreolus*).

Mainly otter, badger, herons and cormorants are the objects of illegal hunt.



The following reasons for breaking the law were found: incorrect idea of a species place in the ecosystem; misunderstanding of the animal behavior reactions and believing in prejudices, and beliefs about some of the species; emotions outweigh the law and sometimes feeling of impunity.

Great number protected mammals and birds as well as some others, which are under special hunting restrictions are objects of poaching.

17. Doychev V., **E. Raychev**, D. Kostov, (2012). Craniological characteristics of wild boars from the region of Sarnena Sredna gora mountain. *Bulgarian Journal of Agricultural Science*, 18 (No 6) 971-979

Abstract

Craniological analysis of 18 male wild boar skulls has been conducted at completed growth (fully-grown third molar tooth). 44 craniological measurements have been made characterizing both the basic skull shapes and proportions (length, height, width and profile line), and the shape and proportions of the various skull parts (facial and cerebral) and of the various bones (lacrima, palatal, etc.). The values found have been compared to the ones obtained by other authors. Based on the values found a classification analysis has been made to establish the population appurtenance of wild boars inhabiting in the region of Sarnena Sredna Gora Mountain.

It has been found out that male boars from the region of Sarnena Sredna Gora Mountain have an extended, relatively narrow and low skull, with a straight profile line. The lacrima bone is extended, with a trapezoid shape. Concerning their craniological characteristics, male wild boars from the region of Sarnena Sredna Gora Mountain are attributed to the wild boar population inhabiting North Bulgaria. The basic skull dimensions characterizing its length, height and width are in positive correlation.

18. Tsubouchi A., D. Fukui, M. Ueda, K. Tada, S. Toyoshima, K. Takami, T. Tsujimoto, K. Uruguchi, **E. Raichev**, Y. Kaneko, H. Tsunoda, R. Masuda, (2012). Comparative molecular phylogeny and evolution of sex chromosome DNA sequences in the family *Canidae* (Mammalia: Carnivora) *Zoological Science*. 29:151-161



To investigate the molecular phylogeny and evolution of the family Canidae, nucleotide sequences of the zinc-finger-protein gene on the Y chromosome (*ZFY*, 924–1146 bp) and its homologous gene on the X chromosome (*ZFX*, 834–839 bp) for twelve canid species were determined. The phylogenetic relationships among species reconstructed by the paternal *ZFY* sequences closely agreed with those by mtDNA and autosomal DNA trees in previous reports, and strongly supported the phylogenetic affinity between the wolf-like canids clade and the South American canids clade. However, the branching order of some species differed between phylogenies of *ZFY* and *ZFX* genes: *Cuon alpinus* and *Canis mesomelas* were included in the wolf-like canid clades in the *ZFY* tree, whereas both species were clustered in a group of *Chrysocyon brachyurus* and *Speothos venaticus* in the *ZFX* tree. The topology difference between *ZFY* and *ZFX* trees may have resulted from the twotimes higher substitution rate of the former than the latter, which was clarified in the present study.

In addition, two types of transposable element sequence (SINE-I and SINE-II) were found to occur in the *ZFY* final intron of the twelve canid species examined. Because the SINE-I sequences were shared by all the species, they may have been inserted into the *ZFY* of the common ancestor before species radiation in Canidae. By contract, SINE-II found in only *Canis aureus* could have been inserted into *ZFY* independently after the speciation. The molecular diversity of SINE sequences of Canidae reflects evolutionary history of the species radiation.

19. Nagai T., E. Raichev, H. Tsunoda, Y. Kaneko, R. Masuda, (2012). Preliminary study on microsatellite and mitochondrial DNA variation of the stone marten *Martes foina* in Bulgaria. *Mammal Study* 37: 353-358
- Short communication

20. Raichev E., H. Tsunoda, C. Newman, R. Masuda, D. Georgiev, Y. Kaneko, (2013). The Reliance of the Golden Jackal (*Canis aureus*) on Anthropogenic Foods in winter in Central Bulgaria, *Mammal Study* 38:19-27



Abstract. Wild canid foraging behaviour and regional abundance are often affected by the availability of anthropogenic food, supplementing natural diet. The feeding habitats of the golden jackal (*Canis aureus*) were compared between two populations in central Bulgaria, for which food availability and the extent of anthropogenic-modified habitat differed. Stomach contents were collected from hunting bags during winters from 1997 to 2009 and compared between an agricultural-hilly region (Region 1) and a forested-mountainous region (Region 2). Although mammalian prey predominated in the jackal's diet in the two regions, diets differed significantly between the regions: in Region 1 the main foods were domestic animals (30.2%), while in Region 2 wild ungulates proved to be the dominant food type (47.9%). We propose that although regional differences in jackal foraging habits were apparent between the two regions, foods originating from human activities were important in both regions. In Bulgaria, the golden jackal is regarded as a nuisance pest, requiring population control. Managing the availability of anthropogenic food sources to jackals, e.g., carcasses of wild and domestic animals, may implicitly reduce jackal abundance and/or discourage jackals from foraging around sites occupied by people.

21. Hirata D., T. Mano, A. Abramov, G. Baryshnikov, P. Kosintsev, A. Vorobiev, **E. Raichev**, H. Tsunoda, Y. Kaneko, K. Murata, D. Fukui, R. Masuda, (2013). Molecular phylogeography of the brown bear (*Ursus arctos*) in northeastern Asia based on analyses of complete mitochondrial DNA sequences. *Molecular Biology and Evolution* 30(7):1644-1652

Abstract

To further elucidate the migration history of the brown bears (*Ursus arctos*) on Hokkaido Island, Japan, we analyzed the complete mitochondrial DNA (mtDNA) sequences of 35 brown bears from Hokkaido, the southern Kuril Islands (Etorofu and Kunashiri), Sakhalin Island, and the Eurasian Continent (continental Russia, Bulgaria, and Tibet), and those of four polar bears. Based on these sequences, we reconstructed the maternal phylogeny of the brown bear and estimated divergence times to investigate the timing of brown bear migrations, especially in northeastern Eurasia. Our gene tree showed the mtDNA haplotypes of all 73 brown and polar bears to be divided into eight divergent lineages. The brown bear on Hokkaido was divided into three lineages (central, eastern, and southern). The Sakhalin brown bear grouped with eastern European and western Alaskan brown bears. Etorofu and Kunashiri brown bears were closely related to eastern Hokkaido brown bears and could have diverged from the eastern Hokkaido lineage after formation of the channel between Hokkaido and the southern Kuril Islands. Tibetan brown bears diverged early in the eastern lineage.

Southern Hokkaido brown bears were closely related to North American brown bears.

22. Mihaylov R., R. Dimitrov, E. Raichev, D. Kostov, K. Stamatova-Yiovcheva, D. Zlatanova, B. Bivolarski, (2013). Morphometrical features of the head skeleton in brown bear (*Ursus arctos*) in Bulgaria. *Bulg. J. Agric. Sci.*, 19: 331-337

Abstract

Fifteen craniometrical indices of the head skeletons in forty brown bears (*Ursus arctos*) found in Bulgaria were studied.

Data for the greatest length of the head skeleton and condylobasal length as well as the results of those motivated us to propose that the greatest length of the head skeleton in Bulgarian population of brown bears is from 280 mm to 350 mm, and the condylobasal length is from 276 mm to 304mm. Our results for length skull (cranium) and face showed that face length were 35.33% of head skeleton length. The length, rostral and caudal width of the bone palate demonstrated that the palate widened in caudal direction. The basal length of the skull was with close value to bone palate length and it could be accepted that the caudal edge of the bone palate was approximately in the middle of the ventral surface of head skeleton. The zygomatic width of the specimens was 59% from the greatest length of the head skeleton.

23. Raichev E., (2014). Factors influencing the mortality of stone marten (*Martes foina*) in road accidents. *Trakia Journal of Sciences*, No 1, pp. 89-93.

ABSTRACT

Studies on road mortality in Mustelidae family in Bulgaria have not been conducted. Data have been collected on a monthly basis on some parts of the national road network. The location of each road accident has been determined as distance from the settlement, type of vegetation around it and according to the road class. Seasonality is observed in the number of road accidents with martens, in summer during the mating period they are the most frequent. In addition to the season factors such as type of vegetation along the road and speed of the road vehicles affect the frequency of road accidents. It is recommended to lay tubes in the embankment facilities along natural pathways of the marten in order to protect it.



24. **Raichev E., (2014).** Effect of some factors on the mortality of the weasel *Mustela nivalis* in road casualties. *Trakia Journal of Sciences*, No 2, pp. 193-197.

ABSTRACT

Carnivore victims of road accidents can be seen often on the road network in Bulgaria. The weasel *Mustela nivalis* is the smallest carnivore in this country. It is a strictly protected species under the Biological Diversity Act, Annex 3 (2002) and the Bern Convention, Annex III (1979). The effect of some characteristics of the habitat through which the road network passes on mortality has been studied: vegetation, distance to town/village, distance to animal farm and farm buildings, and the influence of season. The most common casualties were observed at a distance of 500-2000 m from the town/village and 500 m from farms, feed storage places or farmyards, which relates to the connection of the weasel to anthropogenic landscape. Higher is the percentage of casualties in open areas with low grass vegetation or farm crops compared to places with forest or shrub vegetation.

25. Hisano M., **E. Raichev**, S. Peeva, D. Georgiev, H. Tsunoda, R. Masuda, Y. Kaneko, (2014). Notes on autumn-winter stomach contents of the stone marten (*Martes foina*) in the Balkan mountains, Central Bulgaria. *ZooNotes* 56: 1-6

Abstract. We studied autumn-winter food (November-February, 1997-2003) of the Stone Marten in the Balkan Mountains, Central Bulgaria. A total of 26 stomachs (18 of males and eight of females) were examined, of which contents was expressed as the number of occurrence and relative frequency of occurrence. The result clearly showed that rodents are primary prey for the Stone Marten. Birds and insects were the following categories consumed. The edible dormouse was detected as a prey for the first time in Bulgaria. Besides, wild ungulates and domestic animals were occasionally scavenged, while neither fruits nor artificial materials were detected in the marten stomachs. Thus, our study showed that the Stone Marten in the Balkan Mountains tended to be more carnivorous in winter.

Изготвил:.....

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