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Necrobionts and Necrophilous Beetles (Insecta; Coleoptera) of the South of the Russia

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Abstract: The complex necrobionts and necrophilous beetles of the south of the Russia is described ecologically. The specific composition of groups is circumscribed. The legitimacies of creation necrobionts of the complex from a type of a landscape and taxonomic of an accessory of a corpse are detected. Studying of regional features of formation necrobionts and necrophilous complexes has, both scientific and practical interest. Throughout 20 years we studied fauna and ecological features necrobionts Coleoptera mountain landscapes of North Caucasus and adjoining areas of the south of the Russia.

Key words: Necrobiont communities · Coleoptera · The south of Russia necrobiont and necrophilous fauna

INTRODUCTION

Throughout 20 years we studied fauna and ecological features necrobiont beetles (Coleoptera) mountain landscapes of North Caucasus and adjoining areas of the south of Russia. The cadastre necrobiont and necrophilous beetle the south of Russia a web site ZIN the Russian Academy of Sciences is made: http://www.zin.ru/Animalia/Coleoptera/rus/cadastre.htm

The circle of problems on zoology includes studying of communities of the invertebrates who are forming in various by origin substrata, – including in tissues of victims of the animals and decaying fossils. One of the low-studied groups of the south of Russia is necrobiont Coleoptera for whom difficult konsortivny communications with corpses are characteristic steady and, quite often.

To 60% in entomokompleks on corpses Coleoptera represent, specific structure and the biology which nature of interrelations with drop and a role in ecosystems of the North Caucasus demand studying. Till 1990 to us fragmentary data on these Coleoptera are known.

Nekrofagiya is presented in the different families which have historically stood apart at different times of bugs that testify to importance of these relations in Coleoptera group evolution as a whole; however concrete ways of development of communications of bugs with corpses are badly shined in literature.

MATERIAL AND METHODS

Studying was spent by sampling and by means of traps on different biotopes (the alpine, subalpine meadows, mountain-steppe *et al*.) (Fig. 1). On corpses of vertebrate animals the big number of species of insects of groups Diptera, Hymenoptera, Coleoptera was revealed.

Materials on a thesis are published on the websites: The Stavropol office of REO – http:// stavres.entomology.ru/ Pushkin.html; "Nekrofilny Coleoptera" – http://vkontakte.ru/club19603473; ZINE RAHN: Beetles – http:// www.zin.ru/ Animalia/ Coleoptera/ rus/pushkin.htm; The Life Encyclopedia – http://eol.org/users/46769/newsfeed.

Work is based on the material collected in the territory of the south of Russia (Fig. 1) within 20 field seasons (1994-2014) during the spring and winter period. More than 20000 corpses of different taxonomical accessory are surveyed. 250000 copies of beetles, 11000 larvae and 500 pupae are collected. It is fulfilled more than 500000 traps / days. The part of a material is received from the entomologists conducting researches in this area. The standard entomological methods of collecting and the accounting of insects are used.

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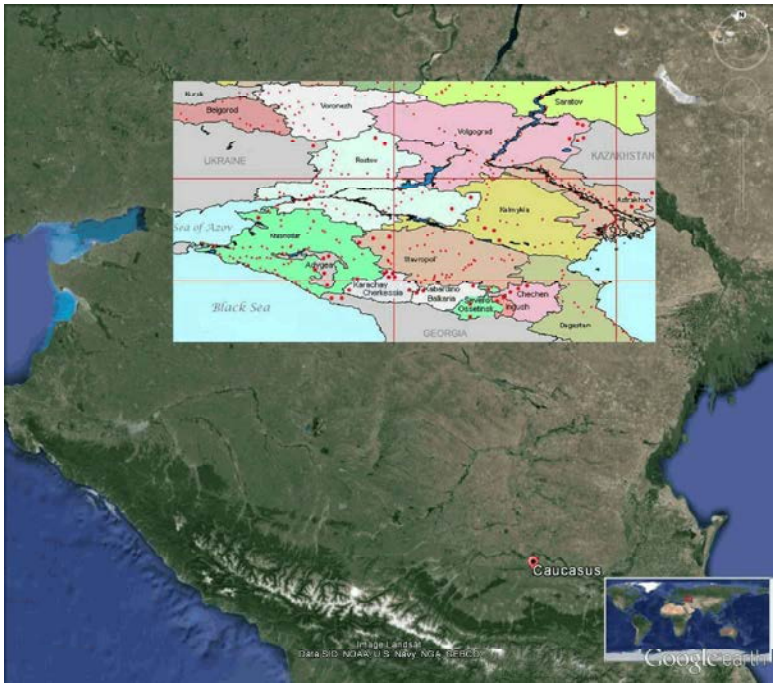

Fig. 1: Red points noted places of collecting material.

RESULT AND DISCUSSION

The specific structure necrobionts necrophilious depends on soil structure a little. It was not possible to reveal and accurate dependence entomofauna a corpse from its physical condition. Certain influence on ability to live of some species necrophages is rendered by soil structure. As a rule, on sites of pastures with dry and dense clay soils digging Scarabaeidae (*Geotrupes*, *Onthophagus*, etc.), Silphidae (*Nicrophorus*) use minks, as for reproduction and a food.

To a lesser degree the fauna necrobionts and necrophilious is influenced by a specific accessory of an animal and a condition of pastures: a microclimate, a microrelief, character of vegetation of associates' biotopes', height above sea level.

Distinctions in structure entomocomplex corpses of different species of animals are expressed mostly at specific level and connected mainly with structural features of a substratum and succession passing on different stages of decomposition of a corpse. They are shown unequally in different groups' necrobiont. - The preference of certain type of a corpse is more accurate is expressed at Dermestidae, Silphidae. Large corpses (for example cows and etc.) prefer species of the geneus: *Necrodes*; *Nicrophorus*, from Staphilinidae - *Creophilus*

Are distributed on territory concerning homogeneous in the ecological relation biotopes': subalpine, semidesertic. Their populations are aggregated, certain influence on their distribution the structure and humidity of soil and as render volume of a portion of cadaveric weight (especially on Silphidae, Dermestidae). In relief fall, near to reservoirs density on substratum unit usually above, than in others biotopes.

On it is mountain-forest plots, besides the listed factors, distribution of insects influence insulations and type vegetation. Comparison of sites of the pasture occupied with a light forest, meadow and xerophilous vegetation, shows, that the greatest variety and in density necrobionts the sites occupied with meadow vegetation differ. Here population density reaches 180-220 individuals on 1 dm^3 (without small Staphylinidae) against 25-80 on a steppe site and 50-120 individuals on 1 dm^3 in a light forest. In the pasture centre on warmed up and dry sites, as a rule, are marked only obligate necrobionts.

Number coprobionts on corpses is high. A concentration place coprobionts insects are places and also places of night parking of cattle on pastures. The density of larvae in such places reaches 100 individuals on 1 dm^3 On operating parking of a larva settle down non-uniformly, localizations on eminences on periphery where large aggregations form.

Fauna necrobionts in places of a congestion of corpses – thanatocenozes a little bit other, than in separate portions of corpses in biotope. Here dominate Scarabaeidae are presented - (*Aphodius foetens* (F.), *A. fimetarius* (L.), *A. varians* Duft.)), are absent *Onthophagus*, *Geotrupes* (meet on corpses in biocenoze not bearing on itself loading cattle).

There, where intensity above, specific structure necrobionts decreases and liberated ecological niches occupy coprobionts. On small pastures, among entomophages dominate Staphylinidae (*Philonthus* spp.). On pastures with a considerable quantity of cattle it is more as number of predators and parasitoids, changes in specific structure are marked. Increases and invasion pupa parasitic Staphylinidae - *Aleochara bilineata* (Gyll.), *A. bipustulata* (L.), etc. It can serve as an illustration of a principle of multistage regulation of number of populations of [26], according to which at low level of number of insects (in this case necrobionts) its basic regulators are polyphags and at higher number - specialised predators and parasitoids. Such change econish is characteristic and for a flat part of Ciscaucasia [17].

The Coleoptera complex of corpse's invertebrate is presented by species Silhpidae, Dermestidae, Staphylinidae, Scarabaeidae, Hydrophylidae, Histeridae, Catopidae, Cleridae, Nitidulidae. Dependence of specific structure Coleoptera on height is shown accurately enough. The aggregate number Coleoptera on a corpse falls and it occurs for the account facultative or casual necrophages. Change of superficially-padalnyh species, with a complex of the digging is observed.

Among Silphidae on drop are noted: *N. littoralis* (L.), *Oiceoptoma t. thoracicum* (L.), *T. dispar* (Herbst), *Silpha carinata* (Herbst), *S. o. obscura* (L.), *Nicrophorus humator* Olivier, *N. vespillo* (L.), *N. nigricornis* Falderman, *N. sepultor* Charpentier. Distribution *N. nigricornis* Falderman, *N. sepultor* Charpentier it is limited Caucasus, these spesies, practically do not meet below 400 m above sea-level.

Dermestidae meet: *Dermestes laniarius* (Ill.), *D. murinus* (L.). The family fauna is very poor owing to features of a hydrothermal mode (many species Dermestidae are ceratophages), the majority of species cannot live above 500-800 m.

Staphylinidae dominates subfamilies Staphylininae (the 40-80 %% from the general number of species). On mean mountain and high mountains dominants are *Ph. corruscus* Gravenhorst, *Ph. succiola* Thomson, are usual *Ph. rotundicollis* Menetries, meet *Gabrius vernalis* (Grav less often.). Species subfamilies Aleocharinae more cold-resistant (Sychevsky, 1972), that is shown in number increase at heights of 2500-3000 m. (numerous and difficultly identified species Atheta, *Tinotus morion* (Grav.)). Genus Aleochara is presented *A. bipustulata* (L.). *Tachinus rufipes* (Deg.), *T. fimetarius* (Grav.) meet on border of a wood belt. With height the number of species: *Oxytelus hamatus* (Fairm.), *Megarthrus depressus* (Payk.).

Scarabaeidae a corpse represent group highly specialized beetles-coprophages. A major factor limiting their distribution, presence of corpses is. In our gathering Scarabaeidae conceded Staphylinidae as qualitatively and quantitatively a little and dominating species have been extended from foothill plains to heights of 2200-2500 m. Most richly in the specific relation has been presented subfamilies Aphodiinae. *Aphodius erraticus* (L.), *A. rectus* (Motsch.), are found out at different heights on all surveyed pastures. A part widespread Aphodius (*A. fimetarius* (L.), *A. rufipes* (L.), *A. foetens* (F.), *A. fossor* (L.), etc.) gravitate to mezophilic station, others prefer dry steppe meadow pastures (*A. immundus* (Creutz.), *A. comma* (Rtt.), *A. sordidus* (F.), *A. vittatus* (Say.), *A. subterranius* (L.)). Among Scarabaeinae dominated Onthophagus. Practically everywhere are extended *O. gibbulus* (Pall.), *O. nuchicornis* (L.). Locally, on mountain-wood, mountain-steppe pastures to heights of 1300-1500 m. meet *O. marginalis* (Gebl), *O. laticornis* (Gebl.). Mainly on open steppe sites to 1300-1600 m. lives *Euoniticellus fulvus* (Goeze.). Geotrupinae widespread *Geotrupes mutator* (Marsch.), 2500 m meeting to heights above sea-level.

Hydrophilidae in our gathering are presented by 14 species which most part eurytopic and occupy corpses from plains to 2500 m. (*Cryptopleurum minutum* (F.), *Sphaeridium bipustulatum* (F.), *S. scarabaeoides* (L.), *S. substriatumn* (Fald.), *S. lunatum* (F.), *Megasternum obscurum* (Marsham.), *Pachysternum haemorrhooum* (Motsch.), *Cercyon melanocephalus* (L.), *C. quisquilius* (L.), etc.). *C. exorabilis* (Shatr.), *C. ovillus* (Motsch.), *C. pygmaeus* (Ill.) meet at heights to 1000-1100 m above sea-level.

Histeridae on number on a corpse concede to another Coleoptera and as they do not form large aggregations, laws of vysotno-zonal distribution in this group necrobionts can be revealed only for widespread, most often meeting representatives of family. From 18 species found out by us histerid such are *Hister sibiricus* (Marsh.), usual on mountain-wood pastures in a combination with highly grass the meadows located from heights 800-2000 m. *Margarinotus ventralis* (Marsh.), occupying mainly corpses to 2500 m.

Families Catopidae, Cholevidae, Cleridae, Nitidulidae are presented by a small number of species. Species of families meet in wood biocenoze, is rare on corpses located on opened station. Catopidae: *Catops nigrita* (Er.), *C. tristis* (Panz.); Cholevidae: *Choleva rousi* Ruzicka, 1993, *Ch obscuripes* Reitter, 1888; from predators Cleridae it is revealed on corpses *Necrobia violacea* (L.). Nitidulidae the dried up corpses prefer are species *Nitidula bipunctata* L., *N. rufipes* L., *Omosita colon* L.

Corpse decomposition – the complex process developing of activity of many organisms [4, 20, 11, 12, 23, 27].

We allocated the following ecological groups:

- Obligate necrofagi: 1. Necrofagi – consumers of dead animals and their remains (the majority of types); 2. Nekrobiont – consumers of dead animals and passing reproduction on a corpse (Nicrophorus); 3. Keratofagi – eating keratinsoderzhashchy substances (Trox, Attagenus, Anthrenus).
- Facultative necrofagi and necribionts: 1. Necrofagi – in addition to the main source of food are capable to consume dead animals and their remains (the majority of types); 2. Zoofagi – predators, eat larvae developing in decaying substances and an image of insects (carabids, histerids, catopids, stahpylinids, clerids); 3. Saprophage – eat the decaying, decaying fossils which still have kept initial structure (Ptiliidae, Tenebrionidae, Philonthus); 4. Parazitoida – parasitize in larvae of the dipterous and other insects meeting on a corpse (Aleochara, Acidota, Atheta).
- Casual visitors of corpses – types which meet in a soil laying, other habitats and them more often are attracted not by a corpse and microflora developing on it (bacteria, mushrooms) and abundance of available food. Them treat micetofagy – polyphagues – omnivores, zoonecrofagy (Cryptophagidae) eat myceliums of mushrooms and bacteria.

The group of specialized inhabitants makes 50% of specific structure. The second group obligate necrobionts is presented carpet beetle and keratofagy: Dermestidae, Nitidulidae and Trogidae. Larvae of Dermestidae develop in corpses of animals. We gathered in the summer on a "fresh" corpse, the skeletirovannykh remains and the keratinsoderzhashchikh substances. Anthrenus – keratophagy [17-19, 27]. Larvae of Nitidulidae develop on dry corpses, bones; can meet in dry manure [13]. Representatives of Cleridae – predators, food by corpse fabrics (Reykhard, 1961 is noted; Pushkin, 2009). Histeridae – predators, eat spineless necrofages, larvae of other types, note food by soft fabrics [19, 21]; own supervision.

Nekrofagiya meets at an image of the genus: Silpha, Catops, Sciodrepoides, Necrobia, etc. Cleridae – obligate predators, Necrobia spp. passed to food by soft fabrics of corpses of vertebrate animals. V.O. Kozminykh, S.L. Esyunin [7] carry them to zoophages and Allison to [3]– to sarcophagi.

The group of zoophages includes Histeridae, Staphylinidae. Types meet in manure [6, 21]. Among Staphylinidae to reveal kopro-and necrophiles difficult. Inhabitants of manure and *Creophilus maxillosus* L. 1758, *Philonthus succicola* Thomson, 1880 and Ontholestes – usual types on corpses. Dominants are *Philonthus marginatus* Nordman, 1837*, P. varians* Paykull, 1789, *P. aeneus* L. 1758, *Tachinus laticollis* L. 1758. Zoophagy combine a nekrofagiya, imago of *C. maxillosus* eats soft corpse fabrics and *M. striola* L. 1758 can break off and scratch out firm fabrics. In our opinion and other authors, the nekrofagiya meets at many groups and is necessary for completion of albumens. Saprophage in a complex occupy 13% and include types of Hydrophilidae, Oxytelinae, Scarabaeidae, Leiodidae. They are among dominant in collecting at water. Representatives of Hydrophylidae make 9,4%. The types of Cercyon noted on corpses meet seldom since prefer manure [5, 22]. On large drop constantly there is *Geotrupes stercorosus* and less often than *Aphodius rufipes*. On small corpses bugs didn't meet, except frogs on which it was noted that earth-boring dung beetles sometimes wore out extremities to the soil on depth of 5 cm (own supervision). It is known that for *Coprus lunaris* (L. 1758) transition from a koprofagiya to a nekrofagiya when bugs скатывают "pear" and make cameras of the cadaveric remains for larvae [1] is noted.

The share of Scarabeidae, Aphodiidae, Trogidae increases on corpses of ruminant and hoofed animals. They are attracted by stomach and intestines contents.

Parazitoidov of 4%. *Aleochara curtula* (Goeze, 1777), *A. brevipennis* L. 1758, *A. lata* Gravenhorst, 1802 is high. *A. curtula* – dominants. Aleochara breed and right there infect pupariya of flies; larvae – endoparasites [15]. Aleochara imago – zoofagy, but some, for example *A. curtula*, eat corpses of insects [25]. On baits at huge number there are small beetles of Atheta ssp.

Aktsedentalny types about 10%, are presented by zoophages, zoonekrofagy, polyphagues, micetofagy. In group of 20 types of ground beetles, etc.

Colonization of a Corpse of Animals and Succession of Coleoptera on it: Decomposition begins right after death therefore there is a disintegration of difficult organic substances on NH_3, H_2S, SO_2, H_2O, ptomaine, mineral salts, etc. The main conditions influencing formation of community necrobionts, – the weight and its integuments [9, 14, 7, 10, 18, 19].

Scales of fishes, drying and being condensed interferes with settling by flies-nekrobiontami. Process of rotting attracts Nicrophorus, Thanatophilus, Leiodidae, Dermestidae. Thanatophilus larvae in the steppe quickly find a corpse and are always plentiful, utilize 70% of fabrics.

In the gumidnykh the statsiyakh fish becomes covered by a mold that attracts saprofagov Staphylinidae, Hydrophilidae. Among zoophages Margarinotus cadaverinus Hoffmann, 1803, types of Saprinus spp. are plentiful. Philonthus spp. Ontholestes spp. Corpses is utilized in 5-6 days. The skeleton is softened and bones from the remains of soft fabrics don't attract bugs of Nitidulidae and Dermestidae.

Integuments of amphibians thin, the corpse quickly dries. In the summer their corpses are mummified and eggs of bugs perish. Lack of utilizers drags out process of decomposition and loss of some stages. From Histeridae *Saprinus semistriatus* Seriba, 1790 is noted. Less attractants corpses of toads. The mummified corpses utilize Geotrupes stercorosus, Nicrophorus, Thanatophilus, their larvae are rarer. In summer months Dermestidae dominate. In the steppe and the semi-desert during the summer period cadaveric weight decays for 15 and in the woods – 8 days; full utilization of corpses happens within a month.

Covers of reptiles a long time keep moisture and at the same time interfere with an otkladka of eggs flies-nekrobiontami on a corpse surface. In the North Caucasus necrobionts colonize corpses of snakes and turtles rather actively. Coleoptera – zoophagous, saprophagous, coprophagous, necrophagous – on such corpses are plentiful. Imago and Nicrophorus spp. larvae. Thanataphilus spp. Silpha spp. Dermestes spp. – the main utilizers, actively decompose cadaveric weight approximately in 10 days (m = 500-700 g).

Corpses of birds of m = 500-700 g actively become populated and colonization small, on the contrary, the very low. Feathers don't interfere with an otkladka of eggs and larvae quickly destroy thin skin and break covers, as a result corpses quickly dry and lose an attraktivnost for saprophages, micetophages. Soft fabrics are utilized by Silphidae and larvae in short terms among all types of studied corpses. Birds of m = 80-90 g decay in the summer in 4-5 days, at 500 g – on the average in 10 days, more than 3 kg – 25 days. Unlike soft fabrics, bones and feathers decay long (of 2 years and more). The specific structure on large corpses of birds is rich, in forest biocenoses, except necrobionts, Oxytelus, *Aphodius rufipes*, *Geotrupes stercorosus*, *Nitidula bipunctata* (L. 1758), etc.

Corpses of small mammals contain a small amount of organic substance, but, thanks to availability of wool and dense integuments, carcasses actively become populated by nekrobiontny types. This main place of development of larvae of Nicrophorus. On the average corpses of mouse-like rodents decay within 7-10 days [18, 19].

Large corpses of mammals contain a large number of the organic chemistry, the become horny components. Among the nekrofilnykh of Coleoptera always there are representatives of families: Silphidae, Histeridae, Staphylinidae, Scarabaeidae, Nitidulidae, Hydrophilidae. In the summer of fabric of corpses (kg m=3-4) bones, claws, wool – decay more than 2 years within 30-40 days. Corpses (m = 10 kg) – more than 4 years; cattle – till 7 years.

On the basis of researches (1994-2010) in biocenoses of the North Caucasus and also the analysis of references us are revealed regularities of destructive microsuccessions (Tab. 1).

Initial stage of decomposition. The first there are Leiodidae, injure indumentums on a muzzle, ears, leaving the grown bald sites, at birds concentrate on a beak. The first Carabidae come to drop from zoophagous, in a night are capable выгрызть soft fabrics. The average duration of a stage in the summer – 2 days. In the spring low temperature slows down approach of putrefactive processes and the stage is tightened.

The II stage – "active decomposition of a corpse by insects" is characterized by the maximum activity of settling некробионтами. In process of growth and increase in their number on corpses there are Histeridae, Staphylininae, parasites of larvae of Aleochara spp. Atetha spp. Silphidae and their larvae are numerous, but on large drop of a larva often fall prey of Carabidae, Creophilus. Larvae necrobionts dilute soft fabrics and enrich the soil with cadaveric juice that attracts saprophades. By the end of a stage Scarabaeidae meet. Presence of Dermestidae depends on humidity, in semidesertic and desert regions of Dermestes spp. meet on a "fresh" corpse and at the last stages of decomposition.

Table 1: Ecological groups of coleopterous corpses of the North Caucasus depending on weight and taxonomical accessory of an animal and height above sea level

	High-rise distribution						Taxonomical accessory of a corpse						
								Aves (the mass of a corpse in g)		Mammalian			
Families / genues	Plain	foothills	middle mountains	highlands	Alpine belt	Nivalna belt	Reptilia (Testudines, Sguamata, Serpentes)	10--300	400-2500	Insectivora	Carnivora Artiodactyla	cattle	Ecological group
Sphaeridiidae													
Sphaeridium,		+	+							+			1.1
Cercyon,	+	+	+							+			1.1
Sphaeritidae													
Sphaerites		+	+								+		1.1
Carabidae													
Carabus,	+	+	+	+	+	+		+			+		1.2.0
Notiophilus		+	+								+		1.2.0
Poecilus	+	+									+		1.2.0
Pterostichus	+	+	+								+		1.2.0
Histeridae													
Hister,	+	+					+			+	+	+	1.2.1
Saprinus,	+	+	+	+			+			+	+	+	1.2.1
Margarinotus,	+	+	+	+	+	+		+	+				1.2.1
Atholus	+								+				1.2.1
Onthophilus	+	+					+	+	+	+	+	+	1.2.1
Cholevidae													
Catops,	+	+	+	+	+					+	+	+	1.2.2
Choleva	+	+	+	+						+			1.2.2
Agyrtidae													
Agyrtes,		+	+	+							+		1.4
Leiodidae (Anisotomidae)													
Ptomophagus													
Silphidae			+	+	+		+						1.5
Necrodes,													
Oiceoptoma,	+	+	+	+	+		+	+	+	+	+	+	2.1
Thanatophilus,	+	+	+	+			+	+	+	+	+	+	2.1
Silpha,	+	+	+	+			+	+	+	+	+	+	2.1
Nicrophorus,	+	+	+	+			+	+	+	+	+	+	2.2
Staphylinidae	+	+	+	+	+	+	+	+	+	+	+	+	2.3
Aleochara													
Creophilus	+	+	+	+	+	+				+	+	+	1.3
Emus	+	+	+				+	+	+				1.2.3
Acidota	+	+	+				+			+	+	+	1.2.3
Atheta		+	+	+	+				+		+	+	1.2.3
Ontholestes		+	+	+	+				+	+	+		1.3
Philonthus		+	+	+			+	+	+	+	+	+	1.2.3
Falagria	+	+	+	+				+		+	+	+	1.6
Trogidae			+	+				+		+	+		1.3
Trox,													
Scarabaeidae	+	+					+	+					2.5[1]
Onthophagus,													
Caccobius	+	+	+				+	+		+	+	+	1.1
Copris	+	+	+						+	+	+	+	1.6
Gymnopleurus	+	+					+	+	+	+			1.1
Plagiogomus	+	+					+	+	+			+	1.1
Scarabaeus		+	+					+	+	+			1.1
Sysyphus	+	+	+	+				+	+	+	+		1.1
Geotrupidae	+	+	+	+			+	+		+			1.1
Geotrupes													
Typhaeus	+	+	+	+			+	+	+	+	+		1.1
Aphodiidae	+						+			+			1.1
Aphodius,													
Dermestidae	+	+	+	+				+	+	+	+		1.1
Dermestes,													
Attagenus	+	+	+				+	+	+	+	+	+	2.4
Anthrenus	+	+	+				+	+	+		+		2.5
Cleridae	+	+	+				+	+					2.5[2]
Necrobia,													
Nitidulidae	+	+					+				+	+	1.2.4
Nitidula,													

Table 1:Continued

	High-rise distribution						Taxonomical accessory of a corpse						
								Aves (the mass of a corpse in g)		Mammalian			
Families / genues	Plain	foothills	middle mountains	highlands	Alpine belt	Nivalna belt	Reptilia (Testudines, Sguamata, Serpentes)	10--300	400-2500	Insectivora	Carnivora Artiodactyla	cattle	Ecological group
Omosita,	+	+					+		+	+		+	2.5
Cryptophagidae	+	+					+		+	+		+	2.5
Cryptophagus													
Tenebrionidae	+	+	+						+	+			1.5
Blaps													
Opatrum	+						+	+		+			1.6
Tentyria	+						+	+		+			1.6
Hydrophilidae	+						+	+					1.6
Cryptopleurum													
Megasternum			+							+			1.1
Pachysternum			+							+			1.1
Spercheidae			+							+			1.1
Spercheus		+	+						+				1.1
Rhizophagidae													
Rhizophagus	+												1.6
Ptiliidae													
Ptinidium	+	+	+	+							+	+	1.6
Acrotricus	+	+	+	+							+	+	1.6
Total:	43	46	42	24	9	4	28	27	25	36	31	23	

Note: ecological groups: 1-facultative necrobionts (necrophageus): 1.1 – coprobionts, 1.2 – zoophageus: 1.2.0 – carabids, 1.2.1 – histerids, 1.2.2 – catopids, 1.2.3 – staphilinids, 1.2.4 – clerids, 1.3 – parazitoids, 1.4 – micsophitophageus, 1.5 – padalny micetophageus, 1.6 – saprophageus; 2 – specialized necrophagi: 2.1 – superficial drop necrophagi, 2.2 – gerpetobionty-nekrofagi, 2.3 – obligate necrobionts, 2.4 – sarcophageus, 2.5 – dermato-and ceratophageus.

[1]- 2.5- at larval and imaginal stages.

[2]- 2.5- at a larval stage.

III stage of "late decomposition by insects". During this period beetles are plentiful superficial padalny: *Oiceoptoma thoracica*, Thanatophilus, Silpha spp. and keratophagy: Nitidulidae, in the soil under a corpse is noted by *Geotrupes stercorosus*. Cadaveric juice attracts saprophages Cercyon, with Omalium, Aphodiidae and Trogidae. At the end *Necrobia violacea* meets. The stage comes to an end with elimination of soft fabrics.

The IV stage "microbiological decomposition of a corpse" begins with the moment of leaving of larvae некробионтов from remains and comes to the end with skeleton disintegration on separate bones [11]. Numerous groups are saprophagy Hydrophilidae, keratophagy Nitidulidae and superficial padalny Silphidae. An important role is played by microbic decomposition and activity of mold mushrooms. Duration during the summer period made 30-50 days. Are noted both specialized micetophages and facultative necrophages.

The V stage – "disintegration of bone fabric". Passes for 2 years, however disintegration of bone fabric completely doesn't come to the end. In a year on places of decomposition we found skeletezirovanny remains. Atheta, by Philontus, etc. are noted.

CONCLUSION

Analyzing the obtained data, it is possible to conclude, that formation of fauna of a corpse is influenced by conditions of associates biotope from which the most significant is thermohydromode. Specificity of a food and degree of development of the migratory abilities helping search of a substratum, places of concentration of food are not less important in distribution of species different taxon. In the present work preliminary results of research which will be supplemented and specified further are resulted.

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