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Necrobiont Coleoptera North-West Caucasus

Sergey Viktorovich Pushkin

ABSTRACT
The complex necrobionts of the alpine girdle of Northwest Caucasus 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 complexes has, both scientific, and practical interest. Throughout 20 years we studied fauna and ecological features necrobiont Coleoptera mountain landscapes of Northwest Caucasus and adjoining areas of Ciscaucasia.

Keywords: Necrobiont Communities, Coleoptera, the Northwest Caucasus Necrobiont Fauna.

1. Introduction
Throughout 20 years we studied fauna and ecological features necrobiont beetles (Coleoptera) mountain landscapes of Northwest Caucasus and adjoining areas of Ciscaucasia. The cadastre necrobiont 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 [1].

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

2.1 Result and discussion
The specific structure necrobionts 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 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 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 [2]. Such change econish is characteristic and for a flat part of Ciscaucasia [3]. 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.). Species subfamilies Aleocharinae more cold-resistant that is shown in number increase at heights of 2500-3000 m. (numerous and difficultly identified species Atheta, *Tinotus morion* (Grav.)) [4]. 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, *Ch. obscuripes* Reitter; 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.

3. 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 таксонов. In the present work preliminary results of research which will be supplemented and specified further are resulted.

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