BEETLES (COLEOPTERA: NOTERIDAE, DYTISCIDAE & HYDROPHILIDAE) IN MUSKRAT AND BEAVER LODGES

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The cases of cohabitation with rodents by beetles of the Dytiscidae, Hydrophilidae and Hydraenidae from Belarus have been mentioned by Myadzvedzeu and Chykileuskaya (1968a; 1968b). Nine species (*Hydroporus tristis* (Paykull), *Hygrotus decoratus* (Gyllenhal), *Coelostoma orbiculare*, *Cercyon ustulatus, Enochrus affinis* (Thunberg), *Berosus luridus* (L.), *Ochthebius minimus* (Fab.), *Hydraena palustris* Erichson, *Limnebius nitidus* (Marsham)) were found in the burrows of common and bank voles. Practically all the specimens were gathered in the burrows either early in spring or late in autumn. It is evident that these hydrobiontic and detritobiontic species used burrows as a refugium in winter and are not true inhabitants of rodents' holes.

Some species of Hydrophilidae were recorded in association with other rodents. *Cercyon kryzhanovskii* Shatrovskiy was found in the nests of flying squirrels in the Russian Far East (Shatrovskiy 1989). *Megasternum prometheus* Shatrovskiy was described from a burrow of the vole *Prometheomis schaposchnikowi* from Georgia. *Cercyon lencoranus* Kuwert was found in a burrow of this species in Georgia (Ryndevich 2003).

Only one species, *Cercyon analis* (Paykull), was found in beavers' lodges. Such few recorded species can be explained by the character of the material used for building lodges, and the siting of these rodents' dwellings. Lodges are usually situated on the bank and are built from the branches of trees and bushes, and mud. The lodge interiors have a low humidity and little decomposing organic matter: beetles were only encountered in the nests inside lodges (Figure 1).

Thirteen species of Noteridae, Dytiscidae and Hydrophilidae were found in lodges of muskrats. Muskrats' lodges are built from thin branches of trees and bushes and different amphibiotic and water plants (*Phragmites, Juncus, Typha*, etc) which attracts detritophages. Their location on the water enables them to be used as a refuge for many water beetles.

Some species showed a preference of certain parts in muskrats' lodges. In the nests inside muskrats' lodges (Fig. 2) there occurred *Noterus crassicornis, N. clavicornis, Acilius canaliculatus, C. analis*, *C. ustulatus*, *Coelostoma orbiculare, Enochrus coarctatus* and *Helochares obscurus*. In side passages (Figure 2) there were recorded *N. crassicornis, N. clavicornis, A. canaliculatus, Anacaena lutescens, C. analis* and *C. ustulatus*. Noteridae, *C. orbiculare* and *E. coarctatus* were found in the peripheral parts of lodges.

C. orbiculare, C. analis and *C. ustulatus* use rodents' dwellings as a source of decomposing plants for food and a place for larvae and for pupation. This can be proved by the existence of immature specimens in beavers' and muskrats' lodges. *A. canaliculatus* uses muskrat lodges for pupation as is clear from the fact that there are larvae of last instars and immature specimens of this species in the peripheral parts of the lodge.

The checklist below includes the numbers of the localities in Belarus and, in parentheses, the numbers of specimens found.

Noteridae

Noterus crassicornis (Müller) – 2(1); 7(15).

Noterus clavicornis (DeGeer) – 7(5).

Dytiscidae

Acilius canaliculatus (Nicolai) – 7(3, includes 2 larvae).

Hydrophilidae

Anacaena lutescens (Stephens) – 7(1).
Cercyon analis (Paykull) – 2(7); 3(1); 4(10); 5(5); 6(2); 7(14).
Cercyon quisquilius (L.) – 3(1).
Cercyon tristis (Illiger) – 1(2); 3(1).
Cercyon unipunctatus (L.) – 3(1).
Cercyon ustulatus (Preyssler) – 3(6); 7(4).
Coelostoma orbiculare (Fab.) – 1(5); 2(1); 3(1); 7(5).
Cryptopleurum minutum (Fab.) – 3(1).
Enochrus coarctatus (Gredler) – 7(6).
Helochares obscurus (Müller) – 7(5).

Localities:

1. Brest reg., Baranovichy distr., near v. Kolpenitza, muskrat lodge № 1, 22.5.2007, leg. Lundyshev D.S.
2. Brest reg., Baranovichy distr., near v. Kolpenitza, muskrat lodge № 2, 22.5.2007, leg. Lundyshev D.S.
3. Brest reg., Baranovichy distr., near v. Kolpenitza, muskrat lodge № 3, 22.5.2007, leg. Lundyshev D.S.
4. Brest reg., Baranovichy distr., near v. Kolpenitza, muskrat lodge, 29.5.2007, leg. Lundyshev D.S.
5. Brest reg., Baranovichy distr., near v. Stolovichy, beaver lodge № 1, 4.6.2007, leg. Lundyshev D.S., Mochulskiy A.Yu.
6. Brest reg., Baranovichy distr., near v. Stolovichy, beaver lodge № 2, 4.6.2007, leg. Lundyshev D.S. & Mochulskiy A.Yu.
7. Brest reg., Baranovichy distr., near v. Domashevichy, muskrat lodge, 17.8.2007, leg. Lundyshev D.S. & Ryndevich S.K.

Besides these species of Noteridae, Dytiscidae and Hydrophilidae, some Carabidae, Staphylinidae, Scarabaeidae, Leiodidae and Scirtidae were found in lodges of muskrats and Carabidae, Staphylinidae, Platypsilidae and Leiodidae were found in beavers' lodges.

Figure 1 A beaver lodge [Photo: A. Mochulskiy]

Figure 2 A muskrat lodge. The main entrance to the cell is easily seen but a side passage is hidden on the right [Photo: D. Lundyshev]

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