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PRELIMINARY STUDIES CONCERNING THE DIVERSITY OF AMPHIPODS (CRUSTACEA: AMPHIPODA) FROM THE VÂNĂTORI-NEAMŢ NATURAL PARK AND RETEZAT NATIONAL PARK

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***Key words**: amphipods, diversity, benthos, Vânători-Neamţ Natural Park, Retezat National Park, Niphargus carpathicus, Gammarus balcanicus*

INTRODUCTION

The amphipods are important groups of invertebrates from lotic ecosystems, which converting the detritus organic in the body tissues used, contributing at the energy flow into ecosystems (Ciubuc, 1984).

The species of amphipods what lives from diverse ecosystems (caves, springs, wells, phreatic), represents a tertiary relict, there having reduced eyes until all disparities but yours antennas becoming very plumose, as tough organs. Usually appears a much discoloration of tegument; many species are almost transparent (Brad, 1999).

Amphipods from aquatic subterranean biotopes are typically benthonic species that are very important in development of the young fishes (Godeanu, 2003). The biotopes that aim their development in very much number are the places of attractions for lot of fish (Ciubuc, 1984).

Although these invertebrates are very frequently in lotic ecosystems from the Natural Park Vânători-Neamţ and Retezat National Park, doesn't well know.

This study presents the present stage of our knowledge concerning the spreading of the amphipods from the Vânători-Neamţ Natural Park and the Retezat National Park.

MATERIAL AND METHOD

Qualitative samples were collected between 1-10 august 2003 from the Retezat National Park and 23-29 august 2003 from the Vânători-Neamţ Natural Park, using a hand net with a mesh size of 360 µm. The biologic material was preserved immediate in the field in 4% formaldehyde. After the identification the material was stored in ethyl alcohol 70% (collection Pârvulescu Lucian, Biology Faculty of Timisoara). The material was identified under stereomicroscope and microscope, using the works of following authors: Brauer (1961), Cărăuşu et al. (1955), Godeanu (2002), Udrescu and Chiriac (1965).

The following parameters were measured at each sampling site: water and air temperature, maxim and medium depth of water, substrate organization, width of the riverbed and grade of cover with riparian vegetation.

RESULTS AND DISCUSSIONS

Vânători-Neamţ Natural Park

One species, *Gammarus balcanicus* (Schaferna 1923) was identified in 25 rivers and 4 lakes (Family Gammaridae, Suborder Gammaridea, Order Amphipoda). This results has been established after gathering and determination those 357 individuals.

We mention that this species have the synonymy *Rivulogammarus balcanicus*.

Only 21 from the 29 stations investigated have amphipods in benthos. Amphipods were not found in the following stations: Ozana River, Agapia River (upstream to the Agapia Monastery), Cracăul Alb River (to the spring) and Media River (to the spring). Or else, neither from these 4 lakes analyzed, do not presenting amphipods in benthos.

The identified species and their localization are presented in Table 1.

Table 1. Repartition of the amphipods identified in the Vânători-Neamţ Natural Park. Numbers between parentheses represent the number of captured individuals

Stations	Species
2	Gammarus balcanicus (11)
3	Gammarus balcanicus (19)
4	Gammarus balcanicus (4)
5	Gammarus balcanicus (29)
6	Gammarus balcanicus (39)
7	Gammarus balcanicus (3)
9	Gammarus balcanicus (28)
10	Gammarus balcanicus (2)
11	Gammarus balcanicus (15)
12	Gammarus balcanicus (2)
16	Gammarus balcanicus (14)
18	Gammarus balcanicus (1)
19	Gammarus balcanicus (26)
20	Gammarus balcanicus (2)
22	Gammarus balcanicus (41)
23	Gammarus balcanicus (16)
24	Gammarus balcanicus (2)
25	Gammarus balcanicus (3)
26	Gammarus balcanicus (6)
27	Gammarus balcanicus (2)
28	Gammarus balcanicus (1)
29	Gammarus balcanicus (1)

1. Catchment's area of Ozana River is subdivided in three catchment's areas of the Nemţişor River, Secu River and Agapia River. The sample sites were established to the spring (if is located in this Park), few on the middle of the river and to the confluence to another rivers. Also, we collected samples upstream and downstream of the different sources of water alterations (villages, monasteries, sheep fold).

In the Nemţişor River and his tributary (station 1-7), was identified the presence of amphipods *Gammarus balcanicus*. The number of individuals is uniformly presented in every each station. Also in each station were identified the young amphipods (under 1.5 mm length).

The sheepfold from Nemţişor River do not makes majors changes of the benthonic fauna in downstream of it.

The samples collected from Secu River and his tributary (station 9-12), show a uniform repartition for *Gammarus balcanicus*, well presented as number of individuals.

In Agapia River, upstream and downstream of Agapia Monastery (station 17-18); the amphipods abundance was strongly reduced. The tourists use for camping frequently the landscape near river (upstream and downstream to the monastery).

The samples collected from the Ozana River (station 13) did not contain any amphipods. We believe that this amphipods are populating this river, their number being reduced, probably, because presence of the many consummators (*Salmo sp., Phoxinus sp., Cobitis sp., Cinclus cinclus*).

2. Catchment's area of Cracău River is subdivided in two catchment's areas of Cracăul Alb River and Cracăul Negru River, each with tributaries.

Cracăul Alb River was investigated starting with tributary Media River (station 19 and 22) and tributary Popii River (station 20). At all stations were found individuals of *Gammarus balcanicus*. The lake near the Chitele Hunting Chalet (from the Popii River course) does not contain amphipods in benthos.

Three sample sites were established along of the Cracăul Alb River: to the spring (station 23) and upstream and downstream to the Mitocul Bălan village (station 24 and 25). *Gammarus balcanicus* was uniform represented at these stations.

On the Cracăul Negru River were established two stations: to the spring (station 26) and to the order I tributary: Gardu River (station 27). All collected individuals were *Gammarus balcanicus*.

After the confluences between the two tributaries of Cracău River, we established following stations: downstream to the confluence but upstream to the Magazia village (station 28) and downstream to the Magazia village (station 29). At station situated downstream to the Magazia village, the current velocity was slowly, the riverbed had 9-10 m, the river been exposed all the time at the sunlight. At this station was collected the species *Gammarus balcanicus* (1 individual). Probably their number decreased because of the consummators presence and also by the condition of environment.

National Park Retezat

Only 7 from the 54 investigated stations, presents amphipods in benthos. It was not found amphipods in samples from the rivers and lakes of the following catchment's areas: Lăpuşnic, Valea Rea, and Slăveiu. All the individuals collected were *Niphargus carpaticus* (Dobr.&Man.1939), Niphargidae family, Amphipoda order (table 2).

1. Berbecilor Valley and Bucura Valley

None of the 10 stations from the lakes are presented amphipods in benthos. In the 18 investigated rivers show that *Niphargus carpaticus* is present only in the river that comes under the Bucura II Peek and goes into the Bucura Lake. The river has narrow there and flows between the stones.

2. Ştirbu Valley

In this valley that contain a complex of lakes: Ştirbu, Gemenele and Negru were found amphipods only in Ştirbu Lake, represented by the *Niphargus carpathicus*.

3. Judele Mare Valley

In the river that enters in Judele Lake, was collected a number of 4 individuals of *Niphargus carpaticus*. The cover of riverbed is over 80% and the substrates are formed of rocks and stones.

4. Judele Mic Valley

This valley is well represented from point of amphipods (*Niphargus carpaticus*), this being found in 4 from the 6 stations. The station were this specie was collected are: the river that enter and the river that goes out from the Ascuns Lake, Răsucit Lake and river that goes out from the Răsucit Lake.

5. Turcelu Valley

Was investigated only one station where was collected 4 individuals of *Niphargus carpaticus*. Stones and gravels with biotecton represent substrate on this station.

Table 2. Repartition of the amphipods identified in the Retezat National Park. Numbers between parentheses represent the number of captured individuals

STATIONS	SPECIES
10	Niphargus carpaticus (3)
25	Niphargus carpaticus (5)
26	Niphargus carpaticus (2)
29	Niphargus carpaticus (2)
37	Niphargus carpaticus (4)
41	Niphargus carpaticus (1)
42	Niphargus carpaticus (5)

CONCLUSIONS

In rivers, brooks and lakes from Natural Park Vânători-Neamţ and National Park Retezat, were identified 2 species of amphipods included in 2 family of order Amphipoda: *Niphargus carpaticus* from Niphargidae family and *Gammarus balcanicus* from Gammaridae family.

The altitudinal repartition of these amphipods we ascertain that *Niphargus carpaticus* leaves at superior height, this specie being typically for the subterranean waters. *Gammarus balcanicus* was found at lower altitude, usually in shady waters.

In waters exposed to sunlight and without refuge spaces (rocks, stones, aquatic vegetation), the number of individuals is reduced, the amphipods evading strong light. The sensibility to light is more evident in case of *Niphargus carpaticus*, this being collected only in regions of the river with a rich cover in stones or vegetations.

The lower height for *Niphargus carpaticus* was 2050 m, Turcelu River from Turcelu Valley. The superior limits are about 2250 m, in Ştirbu Lake from Gemenele Valley. This specie was found only at the stations with rich cover in vegetation (over 80%) and in alpine zone in stations that present rocks and stones in riverbeds.

The higher height for *Gammarus balcanicus* is 971 m (Media River from catchment's area of Cracău River) and 633 m (Nemţişor River, from catchment's area of Ozana River).

Although at the stations from the 2 tributary of Nemţişor River, which came from the zone of reintroduction of the *Bison bonasus*, were found a very much individuals of *Gammarus balcanicus* (at 552m and 565m altitude), we believe that their presence in many individuals is caused by the conditions of drought, the rivers being almost dry.

In rivers with considerable flow (Ozana, Cracău, Agapia) were found in samples a small numbers of individuals, probably because of the presence in to the ecosystems of many predatory (as *Salmo, Phoxinus, Cobitis, Cinclus*).

REZUMAT

În această lucrare, prezentăm date recente asupra diversităţii faunei de amfipode şi aspecte privind repartizarea acestor organisme în funcţie de altitudine în cadrul Parcului Naţional Retezat şi Parcului Natural Vânători-Neamţ. Ca urmare a examinării mai multor probe de bentos, colectate din râurile şi pârâurile din perimetrul acestor parcuri au fost identificate 2 specii de amfipode: *Niphargus carpaticus*, specifică izvoarelor şi apelor freatice şi respectiv *Gammarus balcanicus*, frecvent în ape curgătoare de suprafaţă.

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