On *Limnocythere baikalensis* n. sp. from Lake Baikal (Siberia, U.S.S.R.), with notes on the position of the *L. goebelhagensis*-group (Crustacea, Ostracoda, Limnocytheridae)

By KOEN MARTENS and GALINA MAZEPOVA

With 6 figures and 1 table in the text.

Abstract

*Limnocythere baikalensis* n. sp. is described on material from a bisexual population from Lake Baikal. The species is very closely related to the fossil *L. goebelhagensis* UHLMANN, 1988, described from the German Middle Pliocene, yet differs in aspects of valve morphology, especially in the 5.

*L. baikalensis* n. sp. is here referred to *Limnocythere* n. s., but might in time require a separate (valid) genus, as a number of aspects of soft part morphology in the male are quite peculiar: the absence of movable trabecula and the hyper-development of the funicular rami in the hemipenis and the giant rays on the respiratory plate of the Mea.

Introduction

Lake Baikal, situated in Eastern Siberia (U.S.S.R.) is the largest freshwater lake in the Northern Hemisphere. It is c. 660 km long and between 30 and 70 km wide. Its maximum measured depth to date is 1637 m. It is an eutrophic lake, with well oxygenated waters above the sediment down to its deepest point, and with an impressive number of endemic taxa. The lake as such, or as a conglomerate of different fossil lakes, is between 25 and 50 million years old. The present Lake Baikal has inherited the faunistic elements of these previous waterbodies and now comprises endemic evolutionary lineages in different animal groups. Both the remarkable age and the presence of oxygen throughout the watercolumn are impressive features, especially when compared to another large and well known lake, Tanganyika, which is anything between 2 and 6 million years old (depending on the source) and is completely anoxic below 200 m (Van MEEL, 1987, 1988).

The ostracods of Lake Baikal have been studied over two periods mainly: firstly before 1945 by BRONNIMANN (in different papers), based on material gathered by the expeditions of G. WERETSCHACHIN (see for a summary BRONNIMANN, 1947,
english translation 1988); secondly by one of the authors (G. M.) continuously for
a period of c. 20 years and using own material collected during numerous expedi-
tions over the entire lake. A faunistic review, redescribing all known ostracod
species of this lake and introducing various new taxa, has recently been completed
(Mazurova 1990).

In 1969, a population of a Limnocythere species was collected from Chivyrikai
Bay in the northern basin of the lake. With the much appreciated help of
Dr E. Pietrzynski, this material was sent to the late Dr Dietzel (Berlin), who
positively identified these specimens as belonging to his own fossil species, Limno-
cythere goerzehoferi. To date, this species is only known from the Early and
Middle Pleistocene of Germany. Relying on this expert opinion, the Lake Baikal
populations are still identified as L. goerzehoferi in the faunal review of Mazurova

However, without doubting the profound expertise of Dr Dietzel, the use of
more advanced technology during the re-examination of both types of L. goer-
zehoferi and the material from Lake Baikal (stereo-pairs formed with SEM-
images), revealed small, but consistent differences in mainly valve morphology
between Recent and Fossil populations. These differences are here thought to be of
 taxonomic importance on the specific level (see below).

After an extensive description of the new species and a brief redescription of
part of the type material of L. goerzehoferi, the relationships between both taxa
and their phylogenetic and biogeographic positions are discussed.

Abbreviations used in text and figures

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hemipenis</td>
<td></td>
</tr>
<tr>
<td>cp (1)–(2)</td>
<td>Parts of the copulatory process</td>
</tr>
<tr>
<td>cs</td>
<td>Caudal seta</td>
</tr>
<tr>
<td>dq</td>
<td>Ductus ejaculator</td>
</tr>
<tr>
<td>dl</td>
<td>Dorsal lobe</td>
</tr>
<tr>
<td>f (1–3)</td>
<td>Frenal seta 1–3</td>
</tr>
<tr>
<td>fu</td>
<td>Frenal ramus</td>
</tr>
<tr>
<td>gl</td>
<td>Glans of copulatory process</td>
</tr>
<tr>
<td>LR (a) &amp; (b)</td>
<td>Lobes of lower ramus of claspers</td>
</tr>
</tbody>
</table>

Other soft parts

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>Antennula</td>
</tr>
<tr>
<td>A2</td>
<td>Antenna</td>
</tr>
<tr>
<td>Md</td>
<td>Mandibula</td>
</tr>
<tr>
<td>Mx1</td>
<td>Maxillula</td>
</tr>
<tr>
<td>P(1)</td>
<td>First walking leg (= maxilla)</td>
</tr>
<tr>
<td>P(2)</td>
<td>Second walking leg (= first thoracopod)</td>
</tr>
<tr>
<td>P(3)</td>
<td>Third walking leg (= second thoracopod)</td>
</tr>
<tr>
<td>fu</td>
<td>Furca (in female)</td>
</tr>
<tr>
<td>go</td>
<td>Genital operculum (female)</td>
</tr>
</tbody>
</table>
Valves

H Height of valves
L Length of valves
RV Right valve
LV Left valve

Registration numbers

LI (KM) Specimens deposited in the collections of the Limnological Institute of the
HUMB Museum für Naturkunde der Humboldt-Universität zu Berlin, Palaeontologi-
schen Museum (Berlin).
OC Ostracod Collection of the Royal Belgian Institute of Natural Sciences
(Brussels)

Systematic descriptions

Subclass Ostracoda LATREILLE, 1826
Order Podocopida G. W. MÜLLER, 1894
Superfamily Cytheroida BAIRO, 1850
Family Limnocytheridae KLIE, 1938
Subfamily Limnocytherinae KLIE, 1938
Tribe Limnocytherini KLIE, 1938

Genus Limnocythere BRADY, 1867
Subgenus Limnocythere

Remark: For an extensive diagnosis of the (sub) genus, see MARTENS (1902a).
Tribes within the subfamily are characterized by DANIELLOP et al. (1990a).

*L. baikalensis* n. sp.

Figs. 1–4, 5 (G–O)

Type locality: Chirykoi Bay, inlet near Cape Irkau, northern basin of Lake Baikal.
Depths: depth between 4 and 5 m, sandy bottom with stands of Chaia weeds.

Accompanying ostracod fauna: Baikaliscandona bronquii MAZEPPOVA, 1976; Parbaikaliscandona tuberculata BRONSTETTEN, 1947; Candona geita MAZEPPOVA, 1982; Cythereis laevis baikalensis BRONSTETTEN, 1947; Cythereis sp.; and Cyclocypris ovata (JÖRGES, 1825).

Type material: All material was collected from the above locality on 5.10.1969 (sample no. 259 ostracod collection of G. MAZEPPOVA).

Holotype: A ⅔, with soft parts dissected in glycerine on a sealed slide and with valves removed dry (nos. OC1661).

Alloptypes: A ⅔, dissected and stored as the holotype, with valves furthermore used for SEM (nos. OC1662).

Paratypes: 14 ⅔ + 1 empty ⅔ Carapace; 4 ⅔ + 1 RV and soft parts + 1 juvenile (A–I) ⅔.

Deposition: The holotype and the alloptypes are deposited in the R.B.I.N. (Brussels); the remaining paratypes are lodged in the zoological collections of the Limnological Institute at Irkutsk.
Additional material studied: Some further specimens were collected from the following localities:
  8.10.1972 near delta of Selenga River (Chamsanka), southern part of Baikal, depth 1.0–1.5 m, sandy bottom with mud.
  30.7.1982 (sample no. 1029), gulf of Olchonskyi Vorota, Maloe More, central part of Baikal, depth 40 m, muddy sand.

Diagnosis: A limnocytherid with large ventro-lateral expansions on both valves, these expansions each consisting of two lobes and with the posterior lobe rounded in dorsal view. In internal view of both d and v, both valves with dorsal margin straight, passing into the caudal margin without an angle, the latter margin thus rounded, not rectangular. In d, respiratory plate of Mx1 with three hyper-developed, giant rays; P(3) large, with a whip-like apical claw. v with both respiratory plate of Mx1 and P(3) of normal morphology. Hemipenis basically of the normal L. luteolus type, but with frustal ramus a second lobe, upper ramus of clapping organ (UR) and moveable trabecule absent and lower ramus (LR) of clapping organ consisting of 2 unequal lobes.

Measurements:

  d (in mm, mean ± S.D., n = 5): L = 600 ± 8; H = 293 ± 12; W = 273 ± 8; H/L = 0.46–0.53; W/L = 0.43–0.47.

  v (in mm, mean ± S.D., n = 4): L = 513 ± 9; H = 280 ± 9; W = 298 ± 22; H/L = 0.53–0.57; W/L = 0.55–0.61.

Description of d: Carapace in dorsal view (Figs. 1H, 4J) with an anterior break, posteriorly nearly squarish and with LV slightly overlapping RV; in front of the median sulcus with a small protruberance, posterior to the sulcus with an elongated lobe, the latter slightly curving in dorsal direction (see stereo-pair Fig. 4J), and recticulated in its caudal half only; ventro-lateral expansions present on either side; posterior lobe of this expansion (c. 1/4 of total length) rounded.

Carapace in ventral view (Fig. 4M) with the latter expansions clearly visible; medially with a sinusous indentation. Surface set with pronounced ridges (Fig. 4H); sieve pores present (Fig. 4I). Calcified inner lamella very narrow (Figs. 4E, F).

Both valves very similar in shape, with a broadly rounded anterior margin, almost pointed towards the ventral side, the latter sinusous. Caudal margin narrowly rounded, not forming an angle with the dorsal margin; the latter straight over c. 2/3 of the total length. Anterior margin with c. 10 marginal pore canals, fused zone relatively wide (compare to v).

LV (Figs. 1B, C, 4E, G, 5L) with both anterior and posterior cardinal sockets pronounced and with a solid intercardinal bar. Posteroventral valve margin less produced than in L. gozdecki.

RV (Figs. 1A, D, 4D, F, 5K) with well developed anterior and posterior cardinal teeth, the latter c. twice as long as high, of relatively simple morphology (Figs. 5M, N) and with an intercardinal groove.
A1 (Fig. 2D) 5-segmented; penultimate segment with 6 setae, some setae apically flagellated; terminal segment with 2 setae and 1 bifurcated aesthetasc.

A2 (Fig. 2E) with exopodite a long seta. First endopodal segment with 1 stout apical seta, set with setulae in its distal half. Second endopodal segment with 2 subequal dorsal setae, 2 ventral setae, flanking 1 aesthetasc Y (both setae being longer than the aesthetasc) and 1 long +1 short apical setae. Terminal segment with 3 unequal apical claws.

Md with coxa (Fig. 2I) without special features and with palp (Fig. 2H) 4-segmented. First palp segment with a large respiratory plate (easopodite), carrying 4 long and 2 short plumous setae and one apical seta. Second palp segment dorsally with 1 very long and stout and 1 short and slender setae; apically with a brush of at least 4 subequal and smooth setae. Third segment with a dorsal brush
On Limnocythere baikalensis n. sp. from Lake Baikal

of 5 setae; apically with 1 stout and plumous gamma-seta; ventro-apically with 1 long and 1 short seta. Terminal segment apically with 4 claw-like setae.

Mes with 3 endites and a 2-segmented palp (Fig. 2F) and a respiratory plate (Fig. 2F). The latter with c. 10–12 normal, plumous rays and carrying 3 giant rays with swollen bases and reduced apical parts (checked in several specimens).

Three endites with normal apical chaetotaxy; 1 giant seta inserted near the basis of the first endite. Palp with first segment carrying 5 apical setae; 3 of these set with long setular, 2 set with shorter setulae in their distal half. Second palp segment with 1 large, non-articulating claw and 2 smaller, articulating claws.

P(1) 4-segmented (Fig. 2A), first segment carrying 2 long dorsal setae, inserted closely together in the first half of the segment, an even longer ventral seta and 2 unequal knoe-setae. Second segment elongated, carrying 1 apical seta as long as the 2 terminal segments combined. Apical claw relatively short.

P(2) (Fig. 2B) with setae on first segment more slender, shorter and less hirsute than in the preceding limb, only 1 knoe-seta present. Apical claw somewhat longer.

P(3) (Fig. 2C) much larger than the first 2 walking limbs. First segment, however, relatively smaller (but not reduced as in Limnocythere) and with setae on this segment generally shorter. Apical seta on second segment longer than terminal two segments combined. Apical claw as long as the four segments combined and whip-like.

Brush-like organs (Fig. 2J) present, each with 6 short setae on an elongated basis.

Hemipenis (Fig. 3A) compact, referable to the normal Limnocythere type, but with some exceptional features: absence of a moveable trabecule and hyper-development of the furcal ramus. Lower ramus of clasping organ furthermore consisting of two undivided parts: LR(a), large, hook-like and distally slightly swollen (Figs. 3B, C) — here homologized with the hook-like processus; and LR(b), curved and apically pointed (Fig. 3B, C, S1) — here homologized with the lateral processus. Copulatory processus (Figs. 3B, C, S5–1) with a sickle-shaped glans, a rectangular apical corner in the main body (part cp(2)), a large, flag-like lateral outgrowth (cp(3)) and a well developed basis (cp(1)). Furca (Figs. 3B, S1, L) with a solid, subrectangular ramus and 3 minute setae (f(1)–f(3)).

Description of V: Carapace in dorsal view (Fig. 11) wider then in the d, the entire aspect being more swollen, anteriorly also beak-like but less so than in the d; posterior margin in this view obtusely pointed; posterior lobes of ventro-lateral expansions nearly perfectly rounded, almost as wide as the remainder of the valve.

Carapace in ventral view (Fig. 41) clearly revealing a sinuous indentation in the middle. Surface set with pronounced ridges.

Both valves with a similar shape; but both shorter and relatively higher than in the d, with dorsal margin straight over 2/3–3/4 of the total length, very much sloping towards the caudal side and passing into the caudal margin without an angle;
this caudal side rather narrowly rounded. Ventral margins sinusous. Anterior margin broadly rounded; passing abruptly into the ventral margin, almost pointed. Fused zones in both valves narrower than in the $\delta$; calculated inner lamellae equally narrow. Hinge as in the $\delta$ (Figs. 1E, F). External morphology of both valves in lateral view as in Figs. 4A–C. Vento-caudal margins of valves sometimes serrated (Fig. 1E).

A1, A2 and Md as in the $\delta$ i.e. relative sizes of aesthetasc Y and accompanying setae on A2 not sexually dimorphic in this species (Fig. 3F).

Mxl (Fig. 3G) with chaetotaxy of endites and palp as in the $\delta$; respiratory plate with c. 13 long and 2 short rays; gill rays absent.

P(1) (Fig. 3H) with 2 dorsal and 1 ventral setae on first segment long and hirunte, 2 knee-setae sub-equal, apical claw short.

P(2) (Fig. 3I) with setae on first segment shorter than in the first walking limb.

P(3) (Fig. 3J) with ventral seta on first segment minute, proximally inserted; apical claw longer than in the first 2 walking limbs, but much shorter than in the $\delta$.

Genital operculum elongated. Forca with basis swollen, apical and lateral setae short and smooth (Fig. 3E). Caudal seta (Fig. 3K) present, in a region set with thorn-like projections.

*Limnocythere goersbachensis* DIERSE, 1968

Figs. 5A–F

1968 *L. goersbachensis* n. sp. DIERSE, Monatsber. D. Akad. Wiss. Berlin 10(7): 352–356, figs. 6(a–d), 7(a–d), pl. 2(9–12).

*Material investigated.* Paratypes (no. HUMB.2895); 2 LV + 2 SV $\delta$, 2 LV + 2 RV $\gamma$.

6 of these valves were used for SEM.

*Type locality:* Gürsbach near Nordhausen, south of the highland of Harz (Germany), from a core, originally taken for water pirography in 1962. Specimens found at a depth between 39.2 and 40.5 m. Strata identified at Middle Pleistocene, tentatively assigned to the Czermicz-complex.

For the original description, *Dierse,* also used material from Neuviguasse, Nordhavervorland (north of Harz = Germany), with an age identified as Early Pleistocene (Dierse 1968).

Remark: The original description of this species is extensive and there is no need to repeat all features here in full. We will therefore present a limited diagnosis, with special reference to those features which differ from the new species.

Abbreviated diagnosis: *A medium-sized Limnocythere, with striking ventro-lateral expansions; the latter in dorsal view evenly enlarging towards the caudal side and further in this direction with straight margins, abruptly curving towards the end of the carapace, in all as long as the central 2/3 of the valves. Carapace in dorsal view furthermore with a beak-like anterior and with a rather squarish
Fig. 5. *L. gorskophrenis* Dembina. (A–F) and *L. baikalensis* n. sp. (G–O, all paratype δ, \*linga 10.5 M.I. 1311)

*L. gorskophrenis*; A: SI, RV, external view (syntype: HUMB 2895); B: SI, RV, internal view (PH26372); C: SI, LV, internal view (HUMB 2895); D, G: SI, LV, external view (HUMB 2895); E: SI, LV, external view (syntype: HUMB 2895).

*L. baikalensis*; Gi: Hemiptera, detail of glass of copulatory processus; H: Idema, detail of copulatory processus (syntype: HUMB 2895); J: Idero, detail of brachial transversus and uterus; K: RV, anterior view, detail of hinge; L, LV, anterior view, detail of hinge; M, RV, internal view, detail of sinistre cardinal tooth; N: Idema, detail of posterrre cardinal tooth; O: Soft parts, without hemipenis. Scale: 417 µm for A–F, 321 µm for G, 234 µm for H, 175 µm for M, N, 47 µm for L, J, 33 µm for H, 8 µm for G.
caudal end. $\varphi$ only slightly wider than $\delta$. Especially LV of $\varphi$ in lateral view with a sub-rectangular caudal margin.

Hinge, marginal structure, width of calcified inner lamellae and central muscle scars as originally described and without special features.

Measurements. Dittrich (1968) gave the following measurements:

$\Lambda$: L = 0.34–0.65 mm, H = 0.31–0.32 mm

$\varphi$: L = 0.53–0.60 mm, H = 0.32–0.33 mm

Holotype ($\varphi$ LV): L = 0.56 mm, H = 0.30 mm.

New measurements of the 8 available paratypes are given in Table 1.

Table 1. Measurements (in mm) of paratype valves of L. goersbachensis Dittrich.

<table>
<thead>
<tr>
<th>Sex/valve</th>
<th>L</th>
<th>H</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\varphi$ RV (1)</td>
<td>569</td>
<td>310</td>
</tr>
<tr>
<td>$\varphi$ RV (2)</td>
<td>552</td>
<td>328</td>
</tr>
<tr>
<td>$\varphi$ LV (1)</td>
<td>569</td>
<td>293</td>
</tr>
<tr>
<td>$\varphi$ LV (2)</td>
<td>552</td>
<td>310</td>
</tr>
<tr>
<td>$\delta$ RV (1)</td>
<td>621</td>
<td>310</td>
</tr>
<tr>
<td>$\delta$ RV (2)</td>
<td>638</td>
<td>328</td>
</tr>
<tr>
<td>$\delta$ LV (1)</td>
<td>621</td>
<td>293</td>
</tr>
<tr>
<td>$\delta$ LV (2)</td>
<td>605</td>
<td>276</td>
</tr>
</tbody>
</table>

Discussion

Relationships between L. baikalensis n. sp. and L. goersbachensis Dittrich

Limnoclyther baikalensis n. sp. differs from L. goersbachensis, undoubtedly its closest known congener, mainly by the following aspects: $\varphi$ in dorsal view considerably wider than the $\delta$ (only slightly wider in L. goersbachensis); ventrolateral expansions in both sexes wider, consisting of two lobes and with posterior lobe rounded, the latter nearly evenly rounded in the $\varphi$ (expansion consisting of one part only, with straight margins and not as wide in L. goersbachensis); LV of $\varphi$ with a rounded caudal margin in lateral view (sub-rectangular in L. goersbachensis).

Dittrich (1968: 532, figs. 6a–d) illustrated the $\varphi$ valves as being strikingly unequal, with the LV large and posteriorly sub-rectangular in lateral view and with the RV much shorter and with narrowly rounded caudal margin. However, from the dorsal aspect of both valves, it can be seen that these do not belong to the same individual, probably not even to the same stage, as positions of cardinal teeth on the RV do not match the cardinal sockets on the LV. One could indeed wonder if the illustrated RV is not a small larval instar, instead of an adult. There can be little doubt, however, about the identity of the species as the holotype, a $\varphi$ LV, was
illustrated (Durka, loc. cit., pl. 2(13)) and the typical rectangular aspect is clearly visible. SEM-micrographs of right and left valves of paratypes offered in the present redescriptions (Figs. 5A–13) furthermore show that both valves of adult specimens are of approximately the same size (see also measurements), but also that the LV indeed has a rectangular caudal margin, whereas this margin is more rounded in the RV.

In all, differences in carapace morphology between the fossils from Germany and the living specimens from Lake Baikal are relatively small and are all of a morphological, not of a structural nature. One could therefore question whether a distinction at the specific level is justified. We will here discuss the arguments in full.
While revising the African species of *Limnoctenidae* s.s., *Martens* (1992a) was able to show that geographically and morphologically (with regard to valve morphology) closely related populations, can show important and consistent differences in the hemipenis morphology. According to the hypothesis of "sexual selection by the female choice", as outlined by *Ekblaw* (1985), this necessarily indicates a degree of reproductive isolation, hence of speciation. One of the logical consequences of this revision is therefore that apparent differences in carapace morphology in this group are likely to be of more taxonomic importance than for example in most Cypriidid ostracods, where intra-specific variability in carapace shape is more rule than exception. It should be stressed, however, that one can only rely on structure and shape of the Limnoctenid valves, not on presence, absence or size of tubercules, nodes and reticulations, which are believed to be environmentally used (*Peyronquet* et al. 1986, but see discussion in *Martens*, loc. cit.).

Also, upon comparing the observed radiation of *Limnoctenidae* s.s. in a relatively limited system of semi-isolated but related basins (Zwai-Shala-Awassa in Ethiopia) with the known palaeohydrology of this region (*Martens* 1992b), strong indications for a large evolutionary potential in Recent Limnoctenidae were found. If these views are plausible, then it is difficult to accept conspecificity of two populations, c. one million years apart. Similar evidence for rapid and extensive radiation in *Limnoctenidae* was accidentally provided by *Caronnet* et al. (1987) (see discussion in *Martens* 1992b).

All this suggests that the observed morphological differences in the present situation are most likely to be of taxonomic importance. Finally, as it appeared that a subspecific status in this genus can only safely be judged when relying on morphological characteristics of the hemipenis (*Martens* 1990a), we will rule out this possibility for obvious reasons. Because of all the above, it is here proposed to retain the Recent populations of *Limnoctenidae* s.s. from Lake Bākal in a separate species. This species is most closely related to *L. goyer-bucheni* and both taxa form a separate phyletic lineage within *Limnoctenidae* s.l. (i.e. including various subgenera).

**Generic position**

When comparing the morphology of the new species with *Limnoctenidae* s.s. (= *subgenus Limnoctenidae*) from Europe and Africa (*Martens* 1992a), it appears that striking features are present in the Me1, the *P(3)* and the hemipenis of the *δ* of *L. baikalensis* n. sp. (see in the diagnosis). These characteristics create an isolated position in the genus and one might indeed wonder if a separate (sub) genus would not be justified to accommodate both *L. baikalensis* n. sp. and *L. goyer-bucheni*. However, we refrain from doing this here, as the taxonomy of the Limnoctenidini is already greatly confused (*Danielopol* et al. 1992a) and creating
yet another genus for the Holarctic, without first revising the extensive radiation in North American Recent Limnoocytherid (see for example Delorme 1971) would obscure rather than clarify matters. Both taxa are therefore left in Limno-
cythere.

Zoogeographical position

The entire Rift system, comprising Lake Baikal, constitutes a relatively ancient enclave and a separate biogeographical unit, ranked either as Realm or as Subrealm, according to the source. The biological (and mainly zoological) tenor of this entire unit is of course the endemic fauna of Lake Baikal itself. With regard to the ostracod fauna of the lake, the various endemic lineages are at present referred to the following genera: Pseudocandona Kühnemann, 1902 (s.l.), Candona Baird, 1845 (s.l.), Baikalocandona Mazepova, 1976 and Cytherura Sars, 1925. Although future taxonomic reassessments might introduce new genera for various of the endemic elements, it is still at once clear that the origin of the endemic Lake Baikal fauna is at least two-fold (Mazepova 1990): one group forming radiating phyletic branches of the Candoninae, a subfamily widely represented in the Holarctic, another forming extensive branches of the genus Cytherea presently known in the remainder of the Holarctic by five living representatives (Mazepova 1990, Daniilopol et al. 1990b). In all, 150 species and subspecies of genuine Lake Baikal endemics are today described (Mazepova 1990).

The Baikal endemics populate the open parts of the lake, from the shore zones down to the deepest parts. In sheltered and shallow places, ecologically isolated from the cold and stormy waters, various Palaearctic taxa occur, in all c. 20 species in 8 genera (Mazepova & Drokova 1977, Mazepova 1990).

Finally, a third group of ostracod species occurs. Lake Baikal, a very stable biotope when compared to most other lakes, holds a number of taxa previously more widely distributed in the Palaearctic, but at present seemingly extinct from anywhere else but Baikal. It is here assumed that *L. baikalensis* n. sp. is indeed such a relict of a Limnoocytherid group, probably more widely distributed in the Northern Hemisphere during the Quaternary, but subsequently impoverished, which in Western Europe was at least partly caused by the series of glaciations during the Pleistocene. Similar relict forms are known in some other groups of Baikal fauna. For example, amongst the crustaceans: *Epischura baikalensis* Sars, *Orthocyclops bergmani* Mazepova (Copepoda) and others.

Acknowledgements

This joint work would never have been possible without the financial support supplied by the bilateral agreement between the Belgian Government (Secretary of Internal Affairs) and the Siberian Branch of the Academy of Sciences of the USSR. Equally (if not more)
important was the moral and logistic support continuously offered by Dr. Gerich, present director of the Limnological Institute in Innsbruck, whose strong personality and open-minded approach has brought the scientific gold mine of Lake Baikal to the attention and within the scope of the international scientific community.

Dr. B. Goodenough (Brussels) is greatly acknowledged for constant encouragement and for providing interesting companionship during our stay in Innsbruck. I owe thanks to and on the research vessel "Vereenvacht".

Dr. E. Puttendiek (Berlin) kindly assisted with the first identification of the Baikalian Limnozephyra and provided the opportunity to study the type of L. gosudatou. Mr. J. C. Hines and Mrs. C. Boven (Brussels) offered assistance with the SEM and with the line drawings respectively. Dr. K. Wouters (Brussels) and Dr. D. Dansson (Monseir) read the manuscript and suggested valuable improvements.

References


Addresses of the authors:
Dr. ROSE MULAI, Lomellin Belgisch Instituut voor Natuurwetenschappen, afdeling Zoetwaterbiologie (Royal Belgian Institute of Natural Sciences, Freshwater Biology), Vlaanderenstraat 29, B-1040 Brussels, Belgium. (To whom reprint requests should be sent).
Dr. GALINA MAZDAPOVA, Limnological Institute of Siberian Branch of the Academy of Sciences of the USSR, P.O. Box 4199, 664033 Irkutsk, USSR.