CURRENT RESEARCH

CHIRONOMIDS OF THE ARAL SEA

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The Aral Sea once was the fourth-largest lake in the world, but since about 1957 has been drying up as more and more water is diverted to irrigate cotton and other thirsty crops. The Aral Sea is a terminal lake in an arid region, therefore is affected by environmental changes in the catchment area more than other lakes.

In spite of the long history of hydrobiological investigations in the Aral Sea, no special taxonomic study of chironomids has been performed. The group has been taken into account mainly as one element in productivity estimations of benthic communities as a food source for fishes. Here we present an overview of the available Russian literature containing information on the chironomid fauna of the Aral Sea.

Behning (1936) reported the Sea, especially the muddy bottom of its northern part, to be inhabited by massive quantities of *Chironomus behningi* Goetghebuer. Larvae of this species numbered up to 1630 individuals/m^2 and 25-30 g/m^2; its different life stages formed the main food source for the members of various fish and bird species. Behning illustrated the rear end of the larva, and identified the latter as the form "designated by the larvae researchers as >Chironomus Plumosus Reductus<" (op.cit.: legend to Fig. 1).

From the mid 1940s to the end of the 1970s, macrozoobenthos was investigated regularly across all of the Aral Sea. As a result, species composition and quantitative characteristics of the community at that relatively stable stage of the lake's development and during the initial phases of its salinization are relatively well documented (e.g. Yablonskaya 1960a, 1960b; Yablonskaya et al. 1973; Andreeva 1978, 1983, 1989). However, data on macrobenthos species richness during that time vary rather widely: from 50 to 95 species according to different authors (Khusainova 1958; Zenkevich 1963). In any case, it is clear that species lists were not complete. Moreover, the taxonomy of most groups, especially of the Chironomidae, has changed considerably since then, which makes comparisons of those investigations with later ones very difficult.

Surveys of benthic communities of the Karabaili Archipelago (southeastern part of the Aral Sea) in the summer seasons of 1951 and 1954 (Dengina 1959) showed chironomid distribution to be strongly limited by salinity levels. Maximal abundance and biomass were found in those parts of the archipelago where salinity did not exceed 20 ‰. The most abundant species were reported under the contemporary larval names *Tanytarsus* gr. *gregarius*, *Cryptochironomus* gr. *defectus*, *Tendipes (Chironomus)* f.l. *plumosus*, *T. (C.)* f.l. *plumosus-reductus*, *T. (C.)* f.l. *bathophilus-reductus*, *Cricotopus* gr. *silvestris*, and *Procladius* sp. In salinity above 20 ‰, only *T. (C.)* f.l. *salinarius*, *Tanytarsus* gr. *exiguus* and *Cryptochironomus sp*. were found.

The most detailed description of the Aral Sea chironomid fauna so far has been presented by Konstantinov and Belyanina (1974), who summarised results of previous investigations and gave an illustrated identification key as well as some species-specific information on ecology and habitat. The larvae of 18 chironomid species, mostly Chironomini, are recorded as inhabiting the Aral Sea. The drawings and morphological characteristics facilitate determination of the corresponding species names in current taxonomy.

A rare case of a karyological study in the area is the description of the karyotype of *Chironomus behningi* from the Aral Sea (Belyanina and Kolosova 1979).

Carnivorous invertebrates – in Chironomidae: *Pelopia vilipennis* Kieffer, *Procladius ferrugineus* Kieffer, and *Cryptochironomus* gr. *defectus* – were never numerous in the benthos of the Aral Sea, but by the beginning of the 1980s under pressure from the increasing salinization, even these few species had disappeared (Andreeva and Andreev 1990).

Compared to earlier years (before 1971), in 1976-1977 and 1980, when salinity rose above 15 ‰, only 2 species remained in the lake's bays: *Ch. salinarius* and *Ch. halophilus* (Andreeva 1989). Other species disappeared from the benthic communities (Aladin and Potts 1992). At the end of the 1980s, a drastic lowering of the Sea level made further studies in the open sea impossible. Rare investigations took place in the littoral zones only (Filippov 1995). In 1990, the productivity of benthic assemblages in the coastal zone of the Small Aral Sea was found to be 2.4 times those in the Large Aral Sea (Filippov 2001, 2002). Chironomids, however, were found in the Syr Darya River only and represented by a single freshwater species, *Polypedilum nubeculosum* Meigen - it was very rare and present in very low numbers only.

Currently, only *Chironomus salinarius* can be found in the western basin of the lake (Mirabdullayev et al. 2004).

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Table 1. Chironomid taxa recorded from the Aral Sea.

Recorded as	**Reference**	**Present estimate** (no material studied; names not necessarily valid nomenclaturally or taxonomically)
Ablabesmyia gr. *lentiginosa* Fries.	9	*Ablabesmyia lentiginosa* group sensu Chernovsky (1949)
Procladius ferrugineus Kieff.	14	*Procladius (Holotanypus) ferrugineus* (Kieffer, 1918)
Procladius sp.	9	*Procladius sp.*. sensu Chernovsky (1949)
Pelopia vilipennis Kieff.	5, 14	*Tanypus (T.) vilipennis* (Kieffer, 1918)
Corynoneura sp. Tschern.	14	*Corynoneura* sp. sensu Chernovsky (1949)
Cricotopus gr. *algarum* Kieff.	9	*Cricotopus (Cricotopus) algarum* (Kieffer, 1911)
Cricotopus gr. *silvestris* F.	9, 14	*Cricotopus (Isocladius) sylvestris* group sensu Chernovsky (1949)
Chironomus halophilus Kieff.	4, 11, 14	*Chironomus (C.) aprilinus* Meigen, 1818
Tendipes / *Chironomus* f. l. *bathophilus-reductus*	9	?*Chironomus (C.)* f. l. *bathophilus* sensu Chernovsky (1949)? AND/OR *C. (C.)* f. l. *reductus* sensu Chernovsky (1949)?
Chironomus behningi Goet.	6, 7, 14	*Chironomus (C.) behningi* Goetghebuer, 1928
Tendipes / *Chironomus* f. l. *plumosus*	9	*Chironomus (C.)* f. l. *plumosus* sensu Chernovsky (1949)
Tendipes / *Chironomus* f. l. *plumosus-reductus*	9	*Chironomus (C.)* f. l. *plumosus-reductus* sensu Chernovsky (1949)
Chironomus salinarius Kieff.	4, 9, 15	? *Chironomus (C.)* f. l. *salinarius* sensu Chernovsky (1949) ?OR? *C. (C.) salinarius* Kieffer, 1915 ?
Cryptochironomus gr. *viridulus* F.	14	*Cladopelma viridulum* group sensu Chernovsky (1949)
Cryptochironomus gr. *defectus*	9, 14	*Cryptochironomus defectus* group sensu Chernovsky (1949)
Cryptochironomus sp.	9	*Cryptochironomus sp* sensu Chernovsky (1949)
Cryptochironomus supplicans Meig.	14	*Cryptochironomus supplicans* (Meigen, 1830)
Limnochironomus nervosus Staeg.	14	*Dicrotendipes nervosus* (Staeger, 1839)
Glyptotendipes gripekoveni Kieff.	9, 14	*Glyptotendipes (G.) cauliginellus* (Kieffer, 1913)
Glyptotendipes glaucus Mg.	14	*Glyptotendipes (G.) glaucus* (Meigen, 1818)
Cryptochironomus gr. *conjungens*	14	*Microchironomus conjungens* group sensu Chernovsky (1949)
Polypedilum nubeculosum Meig.	10	*Polypedilum (P.) nubeculosum* (Meigen, 1804)
Polypedilum gr. *scalaenum* Schr.	14	*Polypedilum (Tripodura) scalaenum* grp. sensu Chernovsky (1949)
Tanytarsus gr. *lauterborni* Kieff.	9	*Paratanytarsus lauterborni* group sensu Chernovsky (1949)
Tanytarsus gr. *exiguus* Joh.	9, 14	*Rheotanytarsus exiguus* group sensu Chernovsky (1949)
Tanytarsus gr. *gregarius* Kieff.	9, 14	*Tanytarsus gregarius* group sensu Chernovsky (1949)
Tanytarsus gr. *lobatifrons* Kieff.	14	*Tanytarsus lobatifrons* group sensu Chernovsky (1949)

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