

Firuz Akhrorov (1937-2012) and his contributions to the study of Chironomidae in Tajikistan

Andrey PRZHIBORO,^{1*} Abdusattor SAIDOV,² Ninel PETROVA¹

¹Zoological Institute, Russian Academy of Sciences, 1 Universitetskaya Emb., St Petersburg 199034, Russia; ²Department of Biological and Medical Sciences, Academy of Sciences of the Republic of Tajikistan, 33 Rudaki Av., Dushanbe 734025, Tajikistan

*Corresponding author: dipteran@mail.ru

The paper is dedicated to the memory of Firuz Akhrorov (1937-2012), noted Tajik hydrobiologist and chironomid researcher. The contributions of F. Akhrorov to chironomid research are reviewed briefly. A list of Akhrorov's published works on Chironomidae (35 titles) is provided, as is a list of taxa he described in Chironomidae (18 species names).

Key words: Firuz Akhrorov; Chironomidae; benthos; lakes; Tajikistan; Pamir.

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This small paper is dedicated to the memory of Firuz Akhrorov, Tajik hydrobiologist, who has significantly contributed to the knowledge of ecology and biodiversity of water bodies in Tajikistan, and especially to the research on aquatic Chironomidae in this poorly investigated region.

Firuz Akhrorovich Akhrorov was born on 20 February 1937 in the Gissar District of Tajikistan. In 1960, Firuz graduated from V.I. Lenin Tajik State University in Dushanbe (presently, Tajik National University), and was invited to the staff of the Institute of Zoology and Parasitology of the Academy of Sciences of Tajikistan. All subsequent scientific work by F. Akhrorov was connected with this institute. Later on, F. Akhrorov headed the Department of Ichthyology and Hydrobiology of the same institute for more than 30 years.

In the period from 1969 to 1977, Firuz Akhrorov described 18 new species of Chironomidae from Tajikistan and Uzbekistan (see the list of species below) and, at a later time, he published the first faunal reviews of the Chironomidae inhabiting water bodies in the Pamirs (Akhrorov, 1988, 2004; and references thereafter; see the list of his publications below). In fact, Akhrorov became the first qualified expert on the Chironomidae not only in Tajikistan but also in all the large region of Soviet Middle Asia. However, hydrobiology was the main area of his scientific work; first and foremost, Firuz investigated bottom communities of lakes and reservoirs, lake ecosystems, and the feeding of commercial fish species.

In 1970, Firuz Akhrorov defended his Ph.D. dissertation, entitled "Bottom fauna of Kairak-Kum Reservoir and its use by food fish". From the mid-1960s to



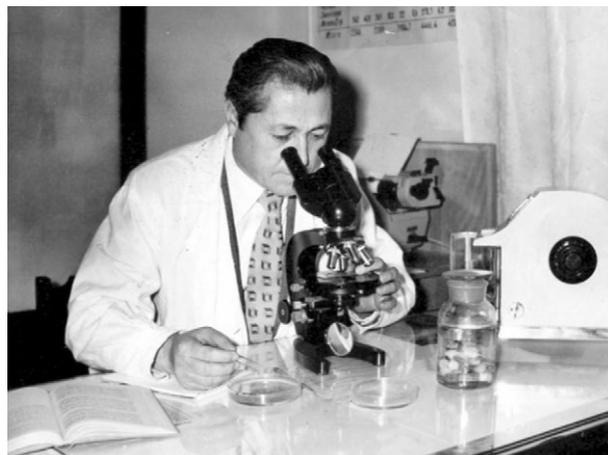
Firuz Akhrorov (2000s).

the 2000s, Akhrorov jointly with colleagues conducted in-depth research on ecosystems and biodiversity of unique high-mountain (3700-4500 m above sea level) lakes in the Pamirs. Stationary field studies of several large lakes (Yashil-Kul, Bulun-Kul, Zor-Kul, Kara-Kul) was conducted during the entire warm season or even over several seasons, which enabled Akhrorov and his associates

to collect rich and diverse material. In addition, they undertook expeditions to investigate many further Pamir lakes as well as other standing and running waters of Tajikistan (rivers, residual marshy water bodies, warm springs, *etc.*).

In the course of his research on aquatic ecosystems and their biodiversity, F. Akhrorov was the first in Tajikistan to investigate the taxonomic structure of chironomids in benthic communities of lakes and reservoirs and the habitat distribution of their immature stages, based on the large material. For several water bodies, he obtained the first detailed data on abundant chironomid species, *i.e.* studied their life histories, growth parameters of larvae and the respective duration of their development. Using the quantitative data on abundance and biomass, F. Akhrorov calculated production values for abundant chironomid species. In addition, he conducted studies on the feeding of commercial fish species in the same lakes, including evaluations of the corresponding importance of chironomids. Thereby, the large amount of quantitative data was used for the first assessments of the functional role of chironomids in the ecosystems of lakes and reservoirs of Tajikistan. Such a study of high-mountain lakes situated in extreme environments in distant areas can be considered as unique. The results of this work have been published most comprehensively by Firuz Akhrorov in a final monograph entitled “Aquatic fauna and biological productivity of high-mountain lakes of Pamir” (2006). In total, F. Akhrorov published the results of chironomid studies in lakes, reservoirs and running waters in more than 30 papers listed below (in many of these publications, chironomid larvae were considered as components of communities and ecosystems).

One more important but still underestimated contribution by Firuz Akhrorov to chironomid research is “A handbook on study of Chironomidae” (1982). In the 1960s to 1970s, several tens of graduated scientists and many young students participated in chironomid research at many scientific institutes and universities of the Soviet Union. However, until the 1980s there was no manual or tutorial in Russian on the methods and techniques in chironomid research. The late V.Ya. Pankratova and other chironomid researchers were discussing an idea to write such a book within the Zoological Institute of Soviet Academy of Sciences (in Leningrad, now St Petersburg) at the time when they met Firuz Akhrorov, who came to the Zoological Institute on a business trip. Firuz took the initiative to edit and organize the publication of this book, which was not an easy task at that time, and proved himself as an excellent organizer. He invited the leading Soviet chironomid researchers, V.Ya. Pankratova, N.Yu. Sokolova, A.I. Shilova, N.I. Zelentsov, L.A. Chubareva and N.B. Il'inskaya, to participate in writing the



Firuz Akhrorov at his work place in the Institute of Zoology and Parasitology in Dushanbe (1980s?).



Firuz Akhrorov during field work at a lake in “Tigrovaya Balka” Nature Reserve, SW Tajikistan (2008?).



Firuz Akhrorov (left) and Nikolai Zelentsov (right) during an expedition to high-mountain lakes of the Pamirs (late 1970s – early 1980s).

handbook, and all of them prepared the chapters on different methods in chironomid research. A small book published in Dushanbe in 1982 became the first and so far only ‘Chironomidae handbook’ in Russian; many students who start to study Chironomidae still actively use this book.

Firuz Akhrorov passed away on 2 March 2012. In the memories of colleagues – chironomid researchers and aquatic ecologists – Firuz will remain as a modest and kind person, who loved the nature of Tajikistan and his work, and at the same time as an excellent, many-sided researcher and organizer of science, who has left behind a rich scientific heritage.

PUBLICATIONS OF F. AKHROROV

The list is arranged in chronological order and includes only the publications with species-group names of Chironomidae mentioned in the text. These works were written in Russian, unless indicated otherwise below. Titles of papers are given as English translations, book titles as transliterations followed by translations [in brackets]. The journal title “Izvestiya Akademii Nauk Tadjikskoi SSR, Otdelenie biologicheskikh nauk” is abbreviated as “Izv. AN Tadjh. SSR”; “Izvestiya Akademii Nauk Respubliki Tajikistan, Otdelenie biologicheskikh i meditsinskikh nauk” as “Izv. AN Tajikistan”.

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LIST OF TAXA DESCRIBED BY F. AKHROROV IN CHIRONOMIDAE

In several of Akhrorov's published proposals of new taxa, he presented the respective new species name in a form such as, e.g., "*Diamesa l. samarkandica* sp. n." (Akhrorov, 1975:67). In each of these presentations, the term "l." (or "L.") reflected that the life stage described was the larva. These interjected terms are considered as not precluding nomenclatural availability of the corresponding names (e.g., Ashe and O'Connor, 2012).

Diamesinae:

Diamesa samarkandica Akhrorov, 1975 (originally *D. "l. samarkandica"*; nomen dubium: Ashe and O'Connor, 2009).

Orthocladiinae:

Eukiefferiella ozhegovae Akhrorov, 1968 (originally *E. "l. ozhegovae"*; nomen dubium: Ashe and O'Connor, 2012).

Psectrocladius acatovae Akhrorov, 1977 (junior synonym of *P. litofilus* Akhrorov, 1977; Zelentsov, 1980; Ashe and O'Connor, 2012).

Psectrocladius dispar Akhrorov, 1977 (junior synonym of *P. barbimanus* (Edwards, 1929); Zelentsov, 1980; Ashe and O'Connor, 2012).

Psectrocladius litofilus Akhrorov, 1977.

- Psectrocladius pseudostilatus* Akhrorov, 1975 (originally *Ps.* “*l. pseudostilatus*”).
- Psectrocladius goetghebueri* Akhrorov, 1977 (junior synonym of *P. barbimanus* (Edwards, 1929): Zelentsov, 1980; Ashe and O’Connor, 2012).
- Psectrocladius nevalis* Akhrorov, 1977.
- Psectrocladius pamiricus* Akhrorov, 1977 (originally *Ps.* “*pamirica*”; junior synonym of *P. barbimanus* (Edwards, 1929): Zelentsov, 1980; Ashe and O’Connor, 2012).
- Psectrocladius pancratovae* Akhrorov, 1977.
- Psectrocladius symbioticus* Akhrorov, 1977 (originally *Ps.* “*symbiotica*”; junior synonym of *P. barbimanus* (Edwards, 1929): Zelentsov, 1980; Ashe and O’Connor, 2012).
- Psectrocladius tadzhikistanicus* Akhrorov, 1977 (junior synonym of *P. pancratovae* Akhrorov, 1977: Zelentsov, 1980; but instead considered as junior synonym of *P. barbimanus* (Edwards, 1929): Ashe and O’Connor, 2012).
- Psectrocladius zernovi* Akhrorov, 1977 (junior synonym of *P. barbimanus* (Edwards, 1929): Zelentsov, 1980; Ashe and O’Connor, 2012).
- Pseudosmittia rivulorum* Akhrorov, 1975 (originally *Ps.* “*l. rivulorum*”; nomen dubium: Ashe and O’Connor, 2012).

Chironominae:

- Cryptochironomus kasimovi* Akhrorov, 1975 (originally *Cr.* “*l. kasimovi*”; nomen dubium, “probably” *Acalcarella kasimovi* (Akhrorov, 1975): Ashe and Cranston, 1990).
- Stictochironomus narzykulovi* Akhrorov, 1968 (originally *St.* “*L. narzykulovi*”; nomen dubium: Ashe and Cranston, 1990).

- Stictochironomus tadzhikistanicus* Akhrorov, 1968 (originally *St.* “*L. tadzhikistanica*”; nomen dubium: Ashe and Cranston, 1990).
- Tanytarsus longipes* Akhrorov, 1968 (originally *T.* “*l. longipes*”; nomen dubium: Ashe and Cranston, 1990).

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