

Outstanding coccidologist Evelyn M. Danzig (1932–2022) and a brief historical review of the Soviet coccidological school

Выдающийся кокцидолог Евелина Марковна Данциг (1932–2022) и краткий исторический обзор советской кокцидологической школы

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Abstract. The article considers the scientific biography of Dr Evelyn M. Danzig (1932–2022) and also provides a brief historical overview of the Soviet coccidological school. Evelyn Danzig was the most famous expert on the scale insects and whiteflies (Insecta: Homoptera: Coccinea, Aleyrodinea) in the former Soviet Union and one of the most prominent authorities in coccidology in the second half of the XX century and early XXI century. She published more than 140 scientific papers and four large monographs, described ten genera and about 120 species of the scale insects, and five genera and 23 species of the whiteflies as new to science. The current names of these taxa as well as the bibliography of E.M. Danzig are given in this article. The life and work of E.M. Danzig are discussed in connection with the fate of the Soviet coccidological school, which had numerous members during most part of the XX century. The features of the Soviet coccidological school are briefly compared with those of the leading foreign coccidological schools.

Резюме. Статья посвящена научной биографии доктора биологических наук Евелины Марковны Данциг (1932–2022), а также содержит краткий исторический обзор советской кокцидологической школы. Е.М. Данциг была самым известным специалистом по кокцидам и алейродидам (Insecta: Homoptera: Coccinea, Aleyrodinea) в бывшем СССР и одним из лидеров мировой кокцидологии второй половины XX века и начала XXI века. Она опубликовала более 140 научных статей и четыре монографии, описала как новые для науки 10 родов и около 120 видов кокцид, 5 родов и 23 вида алейродид. Список современных валидных названий этих таксонов, а также библиография Е.М. Данциг приводятся в настоящей статье. Жизнь и научная работа Е.М. Данциг обсуждаются в связи с судьбой всей советской кокцидологической школы, включавшей многочисленных специалистов на протяжении большей части XX века. Кратко сравниваются особенности советской кокцидологической школы и ведущих зарубежных кокцидологических школ.

Keywords: scale insects, whiteflies, coccidology, Zoological Institute of the Russian Academy of Sciences, scientific schools, Coccinea

Ключевые слова: кокциды, алейродиды, кокцидология, Зоологический институт РАН, научные школы, Coccinea

Zoobank Article LSID: 41365B76-BCA1-4C11-A0E8-5EF7B1A48764

Doctor of biological sciences Evelyn Markovna Danzig (Figs 1, 5, 7) passed away on 20 February 2022 after a long illness. She was the most famous specialist on the scale insects and whiteflies (Insecta: Homoptera: Coccinea and Aleyrodinea) in the Soviet Union (the USSR) as well as in the Post-Soviet Russia, and one of the most prominent authorities in global coccidology. For over five decades, from 1959 until 2005, E.M. Danzig occupied a research position at the Zoological Institute of the Russian Academy of Sciences (ZIN RAS) in St Petersburg (former Leningrad) and continued her scientific work after retirement from 2005 until 2015. The author of the present paper, as a former postgraduate student and long-time colleague of Evelyn, would like to consider her scientific path not in the form of a banal obituary, but as a part of a more general review of the Soviet school of coccidology and its comparison with foreign schools*. The Soviet coccidological community was a rather typical part of the Soviet entomological community in general with a number of specific features. Firstly, this school (unlike many other scientific schools in the Russian history) was entirely a Soviet phenomenon, which originated after the revolution of 1917 and disappeared after the dissolution of the USSR. Secondly, most members of this school were not fundamental but applied entomologists who studied the scale insects with respect to their economic impact only. Thirdly, all the members, with the exception of only the employees of the Zoological Institute (ZIN RAS), worked only with the local or regional faunas, without attempts to study any other regions, especially foreign ones.

There were no specialist coccidologists in the Russian Empire. However, such famous naturalists as K.J. Hamel, J.F. Brandt, N.V. Nasonov (all of them were academicians of the St Petersburg Academy of Sciences) made a certain contribution to coccidology. Karl Joseph Hamel (1788–1862) was the first to write a coccidological text in Russian in 1835; it was a tractate about the Ararat cochineal (*Porphyrophora hamelii* Brandt, 1833). Johann Friedrich Brandt (1802–1879), the first director of the Zoological Museum of St Petersburg Academy of Sciences (now ZIN RAS), described this species and the genus *Porphyrophora*

Brandt, 1833 to accommodate it. The third academician (and also the director of the Zoological Museum), Nikolay V. Nasonov (1855–1939), described and studied several boreal species of the scale insects in 1907–1910. These species were not of economic importance, and their study was in fact the first fundamental investigation of the scale insects in the Russian Empire. However, the biology of the scale insects was only of occasional research interest for N.V. Nasonov, a versatile zoologist, who worked on a wide range of invertebrate and vertebrate animals. Similarly, one of the outstanding biologists in the world history, Nobel-prize winner, Ilya (Élie) I. Metchnikoff (1845–1916), briefly worked on the scale insects during his magnificent scientific career and published in 1866 the first embryological data on the scale insects, based on one species of Diaspididae (*Aspidiotus nerii* Bouché, 1833). In the early XX century, the research on the ontogenesis of scale insects was continued by Eugeniy (Eugen) G. Gabritshevsky (1893–1979), an employee of Moscow University, who in 1923 published the very important work “Postembryonic development, parthenogenesis and ‘pedogamy’ in the scale insects (Coccidae)”. Unfortunately, the subsequent life of E. Gabritshevsky was tragicomic. Due to progressive schizophrenia, he spent many years in various psychiatric clinics in Germany and painted numerous senseless and ugly pictures. These pictures, born in the brain of an insane man, are widely known nowadays (see, for example, <https://folkartmuseum.org/exhibitions/eugen-gabritshevsky-theater-imperceptible/>), whereas the scientific works of E. Gabritshevsky, written before his illness, are almost forgotten despite their undoubted scientific importance.

A minute and strange role in the history of early Russian coccidology was played by the famous politician, baron Theodor von Steinheil (1870–1946). He did not carry out any investigations on the scale insects, but in 1910 he wrote a compiled text “Instructions for collecting and preserving scale-insects (fam. Coccidae)”, based on similar methodical instructions of the famous American biologist Theodore Cockerell and some other sources.

The first specialist Russian-speaking coccidologists A.N. Kiritshenko and A.D. Archangelskaya

* See also Gavrilov-Zimin (2020).



Fig. 1. Evelyn Markovna Danzig in her working room in ZIN RAS, 2000s.

began their faunistic and taxonomic studies on the territory of the Soviet Union in the 1920s.

Alexey (Alexius) N. Kiritshenko (1882–1941) (Fig. 2), brother of the famous Russian and Soviet heteropterologist Alexandr N. Kiritshenko, was a physician according to his education and started to work in entomology as an amateur since a young age and retained his entomological interests during the years of the First World War, socialist revolution, and the Red Terror (Tsvetkova, 1967). From the 1920s until his death, Alexius Kiritshenko published about 20 scientific papers on new or little-known scale insects from southern Ukraine, Crimea, Transcaucasia and Central Asia, mainly about the members of the family Pseudococcidae associated with the roots and stems of steppe, desert and semidesert plants.

Unfortunately, almost nothing is known about the biography of Alexandrine D. Archangelskaya, who was an employee of the Uzbekistan Experimental Plant Protection Station in Tashkent, later transformed into the Central Asian Institute of Plant Protection, and in the quarantine laborato-

ry of the People's Commissariat for Agriculture of the Uzbek SSR. She collected material together with Peter Archangelskiy, the author of several articles on the scale insects. In the 1920s–1930s, she worked mainly on the scale insects fauna of Uzbekistan, Turkmenistan, Kyrgyzstan, southern and southeastern Kazakhstan, and discovered more than 20 species new for science from different families. The most significant achievement of A.D. Archangelskaya was her review of the carminiferous giant scale insects (tribe Margarodini) with the consideration of their morphology, ecology and mode of life.

Similarly, little is known about I.I. Gavalov, who published a number of faunistic papers on the scale insects of the southern European Russia and the North Caucasus in the 1920s–1930s.

The most prominent figure of early Soviet coccidology, Nikolay S. Borchsenius (1906–1965) (Figs 3, 4), began his scientific career in the 1930s. During many years, N. Borchsenius was a curator of the collection of scale insects at the Zoological Institute in Leningrad (now St Petersburg) and

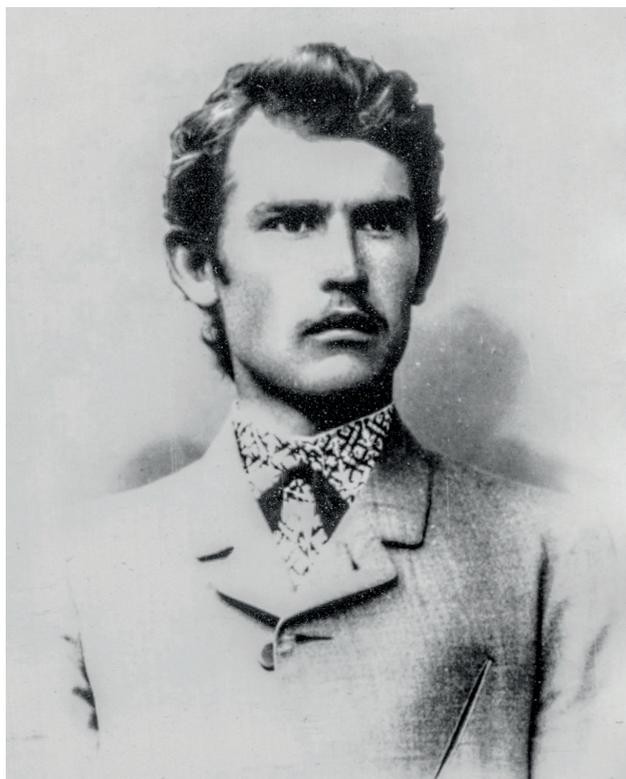


Fig. 2. Alexius N. Kiritshenko at a young age. Photo from archive of Department of hemipterans of ZIN RAS.



Fig. 3. Nikolay S. Borchsenius in 1935. Photo from family archive of Sergey Borchsenius.

the head of the entire Soviet coccidological school. Borchsenius published more than 100 scientific works on different issues of morphology, ecology, taxonomy, and evolution of the scale insects from all large families. In particular, he published in 1949, 1957 and 1960 three large books on the scale insects in the monographic series “Fauna of the USSR” and a number of specialised “Identification keys...” for applied entomologists. Furthermore, Borchsenius organised many coccidological expeditions in different regions of the Soviet Union, China and neighbouring countries. As the result of these expeditions, the insect collection of the Zoological Institute of RAS became the largest repository of the Palaearctic scale insects. An outstanding role was played by N. Borchsenius in the scientific supervision of numerous students who specialised in the field of fundamental and applied coccidology. Almost all subsequent Soviet coccidologists were his direct disciples or based their education on Borchsenius’ books and papers. A more detailed biography of N. Borchsenius can be found in Kryzhanovskij (1965).

After the death of N. Borchsenius in 1965, Evelyn M. Danzig (Figs 1, 5, 7) took over his position as a curator of the scale insect collection at the Zoological Institute and soon became the leader of Soviet coccidology. Evelyn Markovna Danzig was born on 12 October 1932 in Leningrad (St Petersburg) to the Jewish family of Mark Ar’evich Danzig and Rosa Veniaminovna Rivlina. Her father perished in 1941 defending Leningrad during the Second World War. Evelyn’s mother lived a comparatively long life and organised comfortable conditions for Evelyn’s education and subsequent scientific career. Evelyn never married, had no children and was able to devote almost all her time to research and expeditions. Evelyn later recalled that her Jewish origin was an informal obstacle to her admission to the Leningrad University, so she graduated from the Agricultural Institute in 1955 and then became a postgraduate student at the same institute under the supervision of the famous Soviet entomologist Grigoriy Ya. Bey-Bienko. The sister of Evelyn’s father Maria Zelovski lived in Switzerland, and during



Fig. 4. Soviet and foreign coccidologists in London, 1964. From left to right: D. Williams (England), E. Kozarzhenskaya (USSR), N. Borchsenius (USSR), Z. Hadzibeili (USSR), J. Giliomee (South Africa), unknown person, H. Brooks (Australia), Sh. Afifi (Egypt). Photo from personal archive of J. Giliomee.

the 1970s–2010s, Evelyn visited her aunt's family there, sometimes combining these visits with tourism and trips to various West European countries with the aim to collect entomological material. On these trips, Evelyn was often accompanied by her good friend, famous French coccidologist Danièle Matile-Ferrero (Muséum National d'Histoire Naturelle, Paris) (Fig. 7B).

In 1960, Evelyn received a scientific degree of Candidate of Biological Sciences (the equivalent of a PhD in English-speaking countries) and in 1981 became a Doctor of Biological Sciences (Habilitation). Her Candidate dissertation was devoted to the study of the scale insects in the Leningrad Province of Russia. Then Evelyn significantly expanded the area of her collecting activities and carried out many expeditions to the Caucasus, Trans-

caucasia, Central Asia, South Siberia, the Far East of USSR and some countries of Western Europe. Additionally, Evelyn organised a wide international exchange of slide-mounted scale insects between the collection of ZIN RAS and museums in United Kingdom, France, Italy, Hungary, Poland, Israel, USA, and Australia. During all her scientific career, Evelyn Danzig followed the concept of polytypic species and tried to clearly describe the morphological variability in the Palaearctic scale insects. Based on the huge amount of scale insect material collected from the Atlantic coast to the Pacific coast of Eurasia, Evelyn revised the taxonomic chaos of natural and anthropogenic origin, synonymising numerous generic and specific names. As a result of this approach, most species of the Palaearctic scale insects (in contrast to many



Fig. 5. Evelyn Danzig at a younger age (1950s–1970s). **A**, at student’s field practice, 1950s; **B**, **C**, 1960s; **D**, in working room in ZIN RAS, 1971. Photos from from personal archive of E. Danzig, scanned copies provided by A. Przhiboro (A, B, D).

other groups of animals) have been diagnosed by clear non-overlapping characters of stable morphological structures, without any quantitative

variations. Evelyn Danzig played an outstanding role in the discovery and study of the fauna of whiteflies (Aleyrodinea) of the Soviet Union,

especially in the Caucasus, Middle Asia and the Russian Far East. In general, E.M. Danzig published about 140 scientific papers and several large monographs, described about 120 species and ten genera of the scale insects, 23 species and five genera of the whiteflies, which are new to science (and their names are valid up to now). At least six species of the scale insects were named in honour of Evelyn Danzig by other coccidologists, including the author of the present paper [*Antonina evelynae* Gavrilov, 2003; *Chnaurococcus danzigae* Kozár et Kosztarab 1976; *Diaspidiotus danzigae* Kuznetsov, 1976; *Helicococcus danzigae* Bazarov, 1974; *Phenacoccus evelynae* Tereznikova, 1975; *Trionymus danzigae* (Kozar et Kosztarab, 1976)]. In 2005, Evelyn officially retired, but continued to work as a volunteer. So, in 2014–2015, E. Danzig in collaboration with me prepared a two-volume monograph on the Palaearctic Pseudococcidae, with the descriptions (or redescriptions) of 498 species and 72 genera on 1297 pages, that was an important contribution to coccidological studies. During many years, E. Danzig received nomenclatural and taxonomic consultations from the outstanding Russian heteropterologist and an expert in zoological nomenclature Izyaslav M. Kerzhner (1936–2008) (Fig. 7A), who was a coauthor of several coccidological papers that clarified some difficult nomenclatural problems.

In the 1970s, Evelyn Danzig became the apparent leader of coccidological studies in the Soviet Union although a number of older coccidologists worked in different Soviet republics that time. The interests of these coccidologists were limited to the regional faunas or applied studies. Among these workers was Elga F. Kozarzhevskaya (Fig. 4), an expert in harmful and quarantine scale insects, a direct disciple of N. Borchsenius, who worked at the Main Botanical Garden of the USSR Academy of Sciences in Moscow. In addition to the numerous papers, she published in 1992 a large monograph on the scale insects that damage ornamental plants. In the 2000s, E. Kozarzhevskaya finished her scientific work and donated her large collection of pestiferous scale insects to the Zoological Institute in St Petersburg.

Edgar M. Drozdovsky, nematologist, who also studied the scale insects of the Moscow Province, and Anna A. Saakyan-Baranova, who investigat-

ed the anatomy, ontogenesis, and reproductive biology of some scale insects in the 1960s–1970s, also worked in Moscow, but each of them published only several coccidological papers.

Tatiana N. Bushchik (Fig. 6A), a disciple of N. Borchsenius, worked at the Zoological Institute in Leningrad and investigated mainly the comparative morphology of males in the armored scale insects (family Diaspididae). She also studied the scale insect fauna of Turkmenistan in the 1960s.

Svetlana G. Ivanova, a disciple of E.M. Danzig, worked in the 1970s on the scale insect fauna of the Kaliningrad Province and the Sakhalin Island.

Biruta P. Rasiņa studied the scale insect fauna of the Latvian SSR* in the 1950s–1970s. Unfortunately, almost all the names of the species described by her as new to science appeared to be junior synonyms of well-known and widely distributed European species (Stalažs, 2021).

The Soviet coccidological school in the Ukrainian SSR was represented by a direct Borchsenius' disciple Evgeniya M. Tereznikova, who published a number of papers and three monographs in the series "Fauna of Ukraine", and also by Mikhail P. Umnov, Vsevolod G. Korobitsyn and Nikolai N. Kuznetsov, who worked mainly on the scale insects of the Crimea.

In the Georgian SSR, the Borchsenius' disciple Zoya K. Hadzhibeili (Fig. 4) studied the ontogenesis, life cycles and morphology of some Caucasian scale insects, published a number of papers and the monograph "Scale insects of the subtropical zone of Georgia" [for details, see Yasnosh (1999) and Yasnosh & Danzig (2001)**].

A large group of researchers worked on the scale insects in the Armenian SSR. The most important role in those studies was played by Magdalina A. Ter-Grigorian (Fig. 6B), who published a book on Pseudococcidae in the series "Fauna of the Armenian SSR" in 1973 and a number of faunistic and taxonomic papers.

The fauna and ecology of the scale insects of the Kazakh SSR was studied by Galina Ya. Matesova (1925–1998) (Fig. 6C), one of the most prominent

* SSR – Soviet Socialist Republic.

** The reference is given in the list of publications by E.M. Danzig.



Fig. 6. Soviet coccidologists. **A**, Tatiana N. Bushchik (before 1971, from archive of Department of hemipterans of ZIN RAS); **B**, Magdalina A. Ter-Grigorian (from archive of Scientific Centre of Zoology and Hydroecology, National Academy of Sciences of Armenia); **C**, Galina Ya. Matesova, 1985 (from Mityaev, 2004); **D**, Bakhriddin Bazarov at a young age, 1962.

Soviet coccidologists, a disciple of the famous entomologist, writer, and populariser of science Pavel I. Marikovskij. In the 1960s–1980s, G. Matesova participated in numerous expeditions across the Kazakh SSR and studied the scale insect fauna of this huge territory. The microscopic slides of Matesova were well prepared and her papers were written with great accuracy compared to those of other Soviet coccidologists. After the retirement, Matesova donated her large collection of slides to the Zoological Institute in St Petersburg. Several papers have been published on the scientific work of G.Ya. Matesova and in her memory (Mityaev & Jashenko, 1999; Jashenko, 2004; Kazenas, 2004; Kulenova, 2004; Mityaev, 2004).

Roman V. Jashenko, a disciple of G. Matesova, worked in the 1980s–2000s with Kazakh and some other Palaearctic species of the family Margarodidae, especially the genus *Porphyrophora* Brandt, 1833, and also had a great interest in the applied and historical aspects of studying the production of carmine dye from different species of this genus.

For a short time, in the 1990s, the scale insect fauna of the Kirghiz SSR was studied by Natalia I. Abdrashitova, a postgraduate student of Evelyn Danzig. In 1998, N. Abdrashitova defended her candidate (PhD) dissertation “Scale insects of trees and shrubs of the nut-producing forests of Kirghiz Republic”, and after finishing her scientific work she emigrated to New Zealand.

In the Tajik SSR in the 1960s–1990s, a Borchsenius's disciple Bakhriddin B. Bazarov (Fig. 6D) and his younger colleagues Abdurakhman M. Nurmatov and Gennadiy P. Shmelev carried out diversified investigations on the scale insects of the local fauna and published a number of papers and small monographs.

In addition to the researchers mentioned above, there were several research teams that worked on the introduction into the Soviet Union of some oriental species of scale insects that produce shellac and wax. In particular, a special shellac research station, which had a staff of scientific and technical employees, worked in Sukhum (Abkhazia).

It would be logical to expect a further vigorous development of the Soviet coccidological school and the appearance of numerous new researchers. However, the dissolution of the Soviet Union and

the abrupt decrease of financial support of science in the late XX century through the first decades of the XXI century showed the fragility of the collectivistic Soviet model of the organisation of science. The huge Soviet coccidological school disappeared together with the Soviet Union: the researchers of the older generation died or retired (without a continuation of the scientific work), whereas younger generations of coccidologists changed their scientific career to more profitable professions. As a result of this historical cycle, the Russian-speaking coccidology became locked up in the early XXI century in the same place where it started a century earlier, i.e. at the Zoological Institute (Museum) of Academy of Sciences in St Petersburg. At the end of the XX century, Evelyn Danzig remained the only working coccidologist in the entire territory of the former Soviet Union.

The author of the present paper began to work with the scale insects in 1997, in fact as a “legatee” of the Soviet coccidological school but not as a member of it. Therefore, I can consider the Soviet coccidological school as a historical phenomenon rather independently and would like to note several features that distinguish it from the main foreign coccidological schools, which also had a large “imperial” scope of activity in collecting and studying the scale insects. These are the British school (with the centre in the British Museum of Natural History, the largest depository of the scale insects of the World fauna), the French school (with its centre in Muséum national d'Histoire naturelle), and the USA school (with its centre in the Smithsonian Institution).

Firstly, all these foreign schools had a global significance, striving to work with the faunas of all the main geographical zones of the World, whereas the Soviet school was limited in its activity mainly by the borders of the Soviet and neighbouring countries. This was due to strong financial and political restrictions for scientists living in the Soviet Union. After the dissolution of the USSR, E. Danzig and I. Gavrilov-Zimin attempted to fill the appropriate gap by involving various material from non-Soviet and non-Palaearctic faunas, including numerous tropical species of the scale insects, in their studies.

Secondly, many papers and books of Soviet coccidologists were published in poorly known



Fig. 7. Evelyn Danzig with colleagues. **A**, I. Kerzhner (left), I. Gavrilov-Zimin (in centre), and E. Danzig (right), 2005; **B**, E. Danzig and Danièle Matile-Ferrero, 2011.

local journals and by small publishing companies, often with low-quality paper and printing. Moreover, some Soviet authors published their studies in the local national languages of Soviet republics (Latvian, Ukrainian, Georgian, Armenian, etc.).

As a result, such publications were difficult to read even for coccidologists from other Soviet republics and remained unknown abroad.

Thirdly, there were almost no volunteers amongst Soviet coccidologists. On the contrary, in the West European and USA schools, there were many amateurs who played very important roles in coccidological studies during the last two centuries and up to now. In particular, a number of retired coccidologists now work in United Kingdom, France, Italy, USA and some other countries.

Valid names of the scale insect taxa (*Coccinea*) described by E.M. Danzig (including those with co-authors) as new to science

The generic names and the species names within each genus are listed in alphabetic order.

Genera (11): *Archanginella* Danzig et Gavrilov-Zimin, 2013; *Boreococcus* Danzig, 1960; *Endernia* Danzig, 1971; *Ericeroides* Danzig, 1990; *Glycycnyza* Danzig, 1974; *Gregoporia* Danzig, 1979; *Inopicoccus* Danzig, 1971; *Kalaginella* Danzig et Gavrilov-Zimin, 2013; *Lecaniococcus* Danzig, 1967; *Matesovia* Jashenko et Danzig, 1992; *Prionococcus* Williams, Hodgson et Danzig, 2002.

Species (119): *Acanthococcus abaii* Danzig, 1990; *A. borchsenii* Danzig, 1975; *A. confuses* (Danzig, 1962); *A. costatus* Danzig, 1975; *A. hassanicus* Danzig, 1975; *A. herbaceous* (Danzig, 1962); *A. iljinae* (Danzig, 1972); *A. isacanthus* Danzig, 1975; *A. kaschgariae* Danzig, 1972; *A. korotyaevi* Danzig, 1982; *A. micracanthus* Danzig, 1975; *A. oligacanthus* (Danzig, 1972); *A. oxyacanthus* Danzig, 1975; *A. sasae* Danzig, 1975; *A. ulmarius* Danzig, 1975; *A. tesquorum* Danzig, 1971; *Archanginella kyzylkumika* Danzig et Gavrilov-Zimin, 2013; *Atrococcus bejbienkoi* Kozár et Danzig, 1976; *A. herbaceous* (Danzig,

1978); *A. jejuensis* (Kwon, Danzig et Park, 2003); *A. mongolicus* Danzig, 1982; *A. pauperculus* Danzig, 1998; *A. vashlovanicus* (Danzig, 1998); *Balanococcus costacola* Kwon, Danzig et Park, 2003; *Boreococcus ingriscus* Danzig, 1960; *Brevennia cicatricosa* (Danzig, 1985); *B. dasiphorae* (Danzig, 1977); *B. ferenci* Danzig et Gavrilov-Zimin, 2012; *Chionaspis acuta* Danzig, 1976; *Ch. discadenata* Danzig, 1976; *Cryptococcus integricornis* Danzig, 1971; *Diaspidiotus roseni* Danzig, 2000; *Endernia despoliata* Danzig, 1971; *Ericeroides zaitzevi* Danzig, 1990; *Erimococcus multitubulatus* (Danzig, 1980); *Eriococcus williamsi* Danzig, 1987; *Eulecanium juniper* Danzig, 1972; *E. lespedezae* Danzig, 1967; *E. paucispinosum* Danzig, 1967; *E. sachalinense* Danzig, 1972; *E. zygothylloides* Danzig, 1972; *Exaeretopus orientalis* Danzig, 1975; *Fonscolombia cerariifera* (Danzig, 1975); *F. halimiphylli* (Danzig, 1968); *F. herbacea* (Danzig, 1971); *Glycycnyza turanicola* Danzig, 1974; *Greenisca brachypodii* Borchsenius et Danzig, 1966; *G. matesovae* Danzig, 2006; *Heliococcus astragali* Danzig, 2007; *H. dissimilis* Danzig, 1980; *H. dorsiporosus* Danzig, 1971; *H. kurilensis* Danzig, 1971; *H. maritimus* Danzig, 1971; *H. medvedevi* Danzig, 1982; *H. oligadenatus* Danzig, 1972; *H. zoyisae* Kwon, Danzig et Park, 2003; *Icerya hanoiensis* Jashenko et Danzig, 1992; *Inopicoccus setariae* Danzig, 1971; *Kalaginella intermedia* Danzig et Gavrilov-Zimin, 2013; *Lecaniococcus ditispinosus* Danzig, 1967; *Matesovia turkmenica* Jashenko et Danzig, 1992; *Mirococcopsis subalpina* (Danzig, 1985); *M. teberdae* (Danzig, 1985); *Mirococcus fossor* Danzig, 1983; *M. oligadenatus* Danzig, 1982; *M. sphaeroides* Danzig, 1975; *M. ulykpani* Danzig, 1990; *Neotrionymus kerzhneri* Danzig, 1972; *Paraputo pauper* (Danzig, 1971); *Peliococcus latitubulatus* Danzig, 2001; *P. loculatus* Danzig, 2001; *Peliococcus rosae* Danzig, 2001; *Phenacoccus butorinae* (Danzig et Gavrilov, 2005); *Ph. discadenatus* Danzig, 1978; *Ph. edentatus* (Danzig, 1971); *Ph. glanduliporatus* Danzig et Gavrilov-Zimin, 2014; *Ph. guanchorum* Gavrilov-Zimin et Danzig, 2015; *Ph. insularis* Danzig, 1971; *Ph. isadenatus* Danzig, 1971; *Ph. loiki* Danzig, 2001; *Ph. rubicola* Kwon, Danzig et Park, 2003; *Ph. salsolae* Danzig, 1975; *Ph. shutovae* Danzig, 1971; *Ph. tshadaevae* (Danzig, 1980); *Ph. vaccinia* (Danzig, 1960); *Physokermes inopi-*

natus Danzig et Kozár, 1973; *Ph. sugonjaevi* Danzig, 1972; *Planococcus matesovae* Danzig, 1986; *Poaspis kurilensis* (Danzig, 1975); *Pulvinaria aestivalis* Danzig, 1967; *P. borchsenii* Danzig, 1967; *P. crassispina* Danzig, 1967; *P. inconspiqua* Danzig, 1967; *P. minuscula* (Danzig, 1967); *P. pulchra* (Danzig, 1967); *Porphyrophora epigaea* Danzig, 1983; *P. villosa* Danzig, 1972; *Prionococcus agave* Williams, Hodgson et Danzig, 2002; *P. americanus* Williams, Hodgson et Danzig, 2002; *Pseudaspidopectus gramineus* Jashenko et Danzig, 1992; *Puto graminis* Danzig 1972; *P. orientalis* Danzig, 1978; *P. pini* Danzig, 1972; *P. tubulifer* Danzig, 1978; *P. vaccinii* Danzig, 1978; *Rhizococcus inconspicuus* Danzig, 1971; *Rh. microtubulatus* Gavrilov et Danzig, 2009; *Ripersiella parva* (Danzig, 1985); *Trionymus boratynskii* Danzig, 1983; *T. borchsenii* (Danzig, 1983); *T. caucasicus* (Danzig, 1985); *T. dagestanicus* Danzig, 1998; *T. dilatatus* Danzig, 1971; *T. kerzhneri* Danzig et Gavrilov-Zimin, 2015; *T. mongolicus* (Danzig, 1969); *T. nartshukae* (Danzig, 1972); *T. orientalis* (Danzig et Ivanova, 1976); *Vittacoccus interruptus* Danzig, 1975; *Xylococcus quercicola* Danzig, 1980.

Valid names of the whitefly taxa (Aleyrodinea) described by E.M. Danzig as new to science

Genera (5): *Aleyrodiella* Danzig, 1966; *Axacalia* Danzig, 1969; *Bemisiella* Danzig, 1966; *Dialeurolobus* Danzig, 1964; *Rosanovia* Danzig, 1969.

Species (23): *Aleurochiton orientalis* Danzig, 1966; *Aleurolobus vitis* Danzig, 1966; *Aleyrodes philadelphia* Danzig, 1966; *A. singularis* Danzig, 1964; *A. zygia* Danzig, 1966; *Aleyrodiella lamellifera* Danzig, 1966; *Asterobemisia atraphaxius* (Danzig, 1969); *A. dentata* Danzig, 1969; *A. lata* Danzig, 1966; *A. salicaria* (Danzig, 1969); *A. silvatica* (Danzig, 1964); *A. takahashii* Danzig, 1966; *A. trifolii* (Danzig, 1966); *Axacalia spiraeanthi* Danzig, 1969; *Bemisia confusa* Danzig, 1964; *B. mesasiatica* Danzig, 1969; *B. sugonjaevi* Danzig, 1969; *Bemisiella artemisiae* Danzig, 1966; *B. lespedezae* Danzig, 1966; *Dialeurolobus pulcher* Danzig, 1964; *Pealius setosus* Danzig, 1964; *Rosanovia hulthemiae* Danzig, 1969; *Tetralicia erianthi* Danzig, 1969.

The list of publications by E.M. Danzig

(compiled by M.A. Berlina* & I.A. Gavrillov-Zimin)

1957

Danzig E.M. 1957. Some peculiarities of *Lepidosaphes ulmi* L. in the conditions of North-West of USSR and Krasnodar Territory. *Tret'e soveshchanie Vsesoyuznogo entomologicheskogo obshchestva. Tezisy dokladov* [Third conference of the All-Union Entomological Society. Abstracts of communications]: 138–140. Moscow – Leningrad. (In Russian).

1958

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1959

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1960

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1961

Danzig E.M. 1961. On food forms of *Eulecanium francicum* (Lndgr.) (Homoptera, Coccoidea). *Entomologicheskoe Obozrenie*, **40**(3): 571–576. (In Russian, with English summary).

1962

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Acknowledgements

The author thanks M.A. Berlina (ZIN RAS) for her help in compiling the list of E. Danzig's publications, D.T. Kondo (Palmira, Colombia) and B.A. Korotyaev (ZIN RAS) for linguistic corrections.

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Received 19 April 2023 / Accepted 11 September 2023. Editorial responsibility: D.A. Gapon