

**1st International scientific conference
"Science progress in European countries:
new concepts and modern solutions"**

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**Science progress in European countries:
new concepts and modern solutions**

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Section 2. Biology

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Observation of gadflies (Diptera, Tabanidae) in the north-east of Kazakhstan (Pavlodar region)

The blood-sucking insect is a collective name, applied to the group of two-winged blood-sucking insects, i.e. mosquitoes, black flies, gadflies, biting midges. They widely inhabit all the natural zones of Kazakhstan: from hot south and west of the Republic to high-mountain Alpine meadows of the Tian Shan, the Saur-Tarbagatai, the Altay and the Bayanaul-Karkaraly ranges, including Pavlodar Cisirtysh area. Blood-sucking two-winged insects are mostly wide-spread in flooded areas near rivers, lakes and waterlogged massives.

The gadflies (tribes Tabanidae) are the biggest among two-winged blood-sucking insects, having populated almost the whole territory of CIS. As it is well-known from literary sources gadflies in comparison with other two-winged blood-sucking insects do a lot of harm to agricultural animals and only in separate areas of the country fall in with mosquitoes and black flies. They attack people and animals in a great number, as a result, this fact makes cattle grazing difficult. In its turn this leads to loss in animals productivity and in some cases to serious diseases like entomotoxicosis, appearing as a result of toxic influence of poisonous saliva of these insects, which gets into animals bodies if gadflies have hemophilia.

Moreover, the gadflies are considered to be carriers of dangerous infections (malignant anthrax, rabbit disease, goat fever etc.) and play a great role in epizootology of corresponding diseases¹.

The summarized data on gadflies of Kazakhstan V. V. Shevchenko was the first, who brought in 1961. In his monographs he cited information on spreading, ecology, harmful meaning of 72 types of gadflies. Also zoogeographic division into districts have been carried out, patterns of formation of fauna complexes of gadflies in different landscape-climatic zones of Kazakhstan have been defined². This unique work has not lost its scientific meaning yet.

Henceforth, the gadflies as an important components of gnats were studied in all administrative-natural regions of Kazakhstan. A number of theses on the gnats appeared, the gadflies being a part of them also were researched.

In the north-east Kazakhstan blood-sucking two-winged insects have not been studied enough till the last years (2000–2004). Existing data in scientific literature did not give entire notion about species composition, patterns of spreading, season dynamics and day-night rhythm of activity, harmful meaning of these insects, especially gadflies, in various landscape conditions.

The first thorough study of the gadflies of middle course of the river Irtysh, beginning with small town Krivinka of Beskaragay district (the former Semey oblast) and finishing with the Omsk oblast of Russia conducted V. A. Sineltshikov (1962). He partially carried out the research in the territory of the Bayanaul region. As a result of this in the territory of the Pavlodar oblast there 23 types of gadflies were revealed. He made zoogeographic and ecological analysis of gadflies faunas in comparative aspect between Russia and the East-Kazakhstan oblast³. Species composition of gadflies of Bayanaul mountain-woodland massive was thoroughly studied by S. A. Alikhanov (1989). In his work he indicated that about 25 species are wide-spread. Actually he revealed 20 species and 3 subspecies of gadflies⁴.

In the present work the materials on gadflies of the middle course of the river Irtysh, collected from 2004 to 2012, have been observed. Indoor research were conducted in all regions of the Pavlodar oblast and surroundings of Pavlodar city.

As a result of conducted research for the first time for north-east Kazakhstan (Pavlodar oblast) a full species composition, landscape confinedness, ecological features and economic meaning of gadflies were pointed. Besides, first for Kazakhstan was introduced a gadfly *Heptatoma pellucens* F.⁵ in the floodplain of the river Irtysh — *H. lurida*, *H. l. lundbecki*, *H. bimaculata*, *H. montana morgani*, *T. maculicornis*, *H. erberi*, *Haem. pallidula*.

Species composition of gadflies in Pavlodar oblast accounts about 35 species with subspecies, related to 6 types — *Hybomitra* (37%), *Tabanus* (26%), *Chrysops* (14%), *Haematopota* (11%), *Atylotus* (9%) and *Heptatoma* (3%). The base for species composition form representatives of the first 4 types.

In the floodplain of the river Irtysh dominate — *Tabanus autumnalis autumnalis* (id — 24–30,1%), *Hybomitra nitidifrons confiformis* (id — 23,5–26,7%), *H. ciureai* (id — 11,4–13,6%), *H. distinguenda* (id — 10–13,7%), in Bayanaul mountain-woodland massive — *Haematopota pluvialis* (ИД-24,7%), *T. b. bromius* (17,3%), *H. nitidifrons confiformis* (ИД-16,1%), *Atylotus rusticus* (ИД-14,3%). Throughout the region *H. muehlfeldi*, *Chrysops relictus*, *Haem. subcylindrica*, *H. lundbecki lundbecki*, *H. m. montana*, *H. m. morgani*, *Haem. pallidula*, *H. nitidifrons nitidifrons*, *H. distinguenda*, *H. sareptana*, *Haem. turkestanica*, *Haem. subcylindrica* are still insignificant.

Species composition of gadflies of the researched region has heterogeneous nature and consists of various fauna groups, related to Boreurasian, Mediterranean and Afroeurasian types of fauna. Ground for species composition form elements of fauna groups (taiga-woodland, taiga-eastern-Siberian, European-Siberian woodland, forest steppe) of Boreurasian type (22; 62,85%). Forest steppe (8; 36,4%) and Eurasian-

¹ Андреев К. П. Ветеринарная энтомология и дезинсекция. — М. — «Колос». — 1966. — С. 105–106. (Andreev K. P. Veterinary entomology and disinfection. — Moscow — «Kolos». — 1966. — p. 105–106).

² Шевченко В. В. Слепни Казахстана. — Алма-Ата. — «Изд. АН КазССР». — 1961. — 322 с. (Shevchenko V. V. The Gadflies of Kazakhstan. — Almaty — Publishing House of the Academy of the Kazakh SSR — 1961. — p. 322).

³ Синельщиков В. А. О слепнях среднего течения реки Иртыша//Тр. Ин-та зоологии АН КазССР. — Алма-Ата. — 1962. — Т. XVIII. — С. 241–253. (Sineltshikov V. A. About the gadflies of the middle course of the river Irtysh//The Institute of zoology by the Academy of the Kazakh SSR. — Almaty. — 1962. — V. XVIII. — p. 241–253.).

⁴ Аликханов Ш. А. Кровососущие двукрылые (Diptera: Culicidae, Simuliidae, Ceratopogonidae, Tabanidae) Каркаралинского и Баянаульского горно-лесных массивов: автореф. ... канд. биол. наук: 03.00.09. — Алма-Ата. — 1989. — 25 с. (Alikhanov S. A. The blood-sucking two-winged insects (Diptera: Culicidae, Simuliidae, Ceratopogonidae, Tabanidae) of Karkaraly and Bayanaul mountain-woodland massives: abstract of a candidate of biological sciences: 03.00.09. — Almaty — 1989. — p. 25).

⁵ Нурлина А. Б., Исмибеков Ж. М. О нахождении *Heptatoma pellucens* F. в Казахстане//Вестник ПГУ, серия химико-биологическая. — Павлодар. — 2006. — № 1. — С. 68–72. (Nurlina A. B., Isimbekov Z. M. About findings of *Heptatoma pellucens* F. in Kazakhstan//The Herald of PSU, chemical-biological series — Pavlodar. — 2006. — № 1. — p. 68–72.).

Siberian representatives of woodland massive complex dominate (7; 31,8%). In all natural-climatic zones of the region one can come across with 6 types (27,3%) of taiga-woodland gadflies and taiga-eastern-Siberian complex is represented only by 1 type.

In plain steppe zone and intrazonal landscape of the floodplain of the river Irtysh the gadflies begin their flight in the first and second decades of June and finish their activity at the end of the third decade of August. In Bayanaul mountain-woodland massive the gadflies begin their activity in the second and third decades of June. Throughout the region massive flight is noted in the second half of June and July. The gadflies attack people and animals from 9–11 a. m. to 20–21 p. m. with population peak at 14–16 p. m. at noon. The total time of diurnal activity of gadflies is 12 hours.

Therefore, most of gadflies, attacking animals, are dominating and subdominating types with total index of domination 95,18%, which present practical interest as infestants of agriculture like insects-hemophages.

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Data on food composition of juvenile pollock in the waters of the south-eastern coast of Kamchatka in August 2012

Данные о составе пищи молоди минтая в водах у юго-восточного побережья Камчатки в августе 2012 года

Авачинский залив — залив Тихого океана у юго-восточного берега полуострова Камчатка. Данный район имеет важное промысловое значение, так как является традиционным местом обитания и воспроизводства многих промысловых рыб, в том числе и молоди минтая.

Минтай — самый многочисленный вид тресковых, распространенных в северной части Тихого океана. Несмотря на довольно длительное промысловое использование, многие стороны его биологии и питания молоди изучены еще недостаточно.

Материалом для исследования послужили пробы по питанию молоди рыб минтая, собранные в водах у юго-восточного побережья Камчатки. Сбор проб проводили в Авачинском заливе в пределах района, ограниченного координатами 52°58'00"–53°46'00" с. ш. и 159°42'00"–159°58'00" в. д. (рис. 1) в августе 2012 г. из уловов ИКС-80 в период проведения ихтиологической съемки. Всего за период исследований было проанализировано 271 экземпляр рыб, у которых проводили биологический анализ, и отбирали желудки для дальнейшей камеральной обработки.

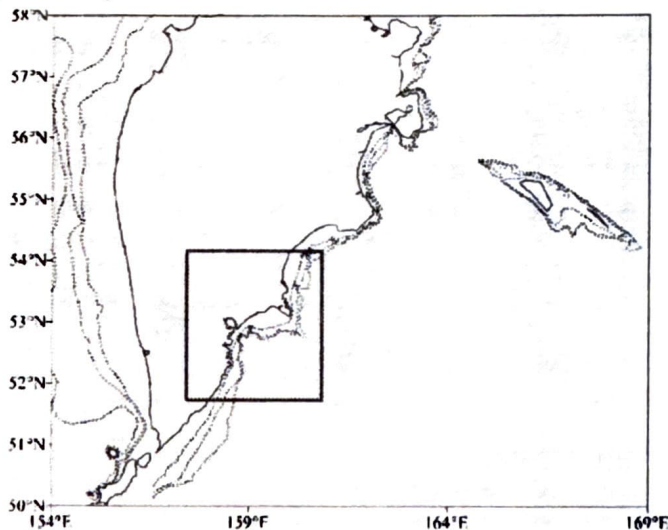


Рисунок 1 — Район сбора материалов по питанию молоди минтая в Авачинском заливе в августе 2012 г.

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