

**ҚАЗАҚСТАН РЕСПУБЛИКАСЫ
БІЛІМ ЖӘНЕ ҒЫЛЫМ МИНИСТРЛІГІ**

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МАТЕРИАЛДАРЫ



МАТЕРИАЛЫ

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- Nowadays many people are familiar with the science, so most Teens know what genetically modified organisms. For example, in my survey of 35 people, 32 replied that they know about these products. This proves that people know about the quality of products and their impact.
- People are willing to individual measures actions to improve the quality of natural products and their harmful effects. For example, they are willing to give up their favorite foods if they know that there are GMOs. I think, they are worried about their future and are committed to remove today on the market of GMOs
- First, some people don't want to give up tasty food, knowing that they are harmful to health. Secondly, GMO foods are very many to spread around the world. For example, a publisher such as Coca-Cola, Snickers and Sprite can be found in any country without any difficulties.

I did not get to interview because of complications, such as living in a boarding school in the city there are no such experts, who carried out research on my topic. The interview probably would have given a deeper understanding of the problems to change. I'm sure the interview will reinforce the results. However, I am confident in my conclusion because my Email is a survey to know the point of view of adolescents, and the opinion of the professors as a secondary resource.

The research was generally that show the harmful of GMO. My results were helpful for my position. My conclusion was that if you exceed the level of not natural products that the audience soon gets used to it and not be able to resist them. Because this products have more demand than naturally food. To have a better outcome next time, I could conduct and interview with professor or some people who worked in GMO sphere.

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THE MODERN STATE OF ORNITHOFAUNA OF PETROPAVLOVSK

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The process of urbanization is currently proceeding at a rapid pace. The number of cities increases, their sizes grow, huge megacities appear, the number of urban population grows. Apparently, in the near future urbanized territories will become predominant on the lands transformed by man. Birds, like other wild animals, have long been neighbors with humans in cities, are an integral part of urban biogeocenoses. Many of them could successfully adapt to life in urban conditions and developed a number of adaptive features of ecology. Some species only begin to master the city, others gradually disappear. The number of urban populations of individual bird species has increased so much that it

becomes necessary to regulate it. Therefore, it is necessary to study urban birds, first of all, from a practical point of view.

Over the past 50 years, 144 species of birds belonging to 14 orders, which is 49.6% of the species from the fauna of the North Kazakhstan region has registered on the territory of the city of Petropavlovsk. 123 of 144 bird species were recorded during fieldwork in 2013-2016, the rest - 21 species included in the list based on observations in previous years.

According to the nature of the stay, birds marked on the territory of the city are distributed as follows: more than half - 79 species (54.5%) nest, also 14 species (*Buteo buteo*, *Falco subbuteo*, *Falco vespertinus*, *Botaurus stelaris*, *Perdix perdix*, *Chlidonias leucopterus*, *Actitis hypoleucos*, *Larus canus*, *Picoides minor*, *Lanius collurio*, *Acrocephalus agricolla*, *Phylloscopus collybita*, *Pamirus biarmicus*,) – presumably nesting species.

On migration, there are 101 species, or 70.1% of birds' fauna of Petropavlovsk, 12 species are "summering", i.e. not nesting in the city, but meeting in nesting time or arriving to the city for feeding, like herons, cormorant, some species of gulls. There are 29 (20.8%) species in winter, and 2 species - migratory species, i.e. rarely and irregularly appearing on the territory of the city

The basis of ornithofauna is Passeriformes - 62 (42,%) species, Charadriiformes are present - 22 (15,2%), Falconiformes - 14 (9,6%), Anseriformes - 17 (11%), Ciconiiformes - 3 (2%), Gruiformes - 4 (2,8%) species, others are represented by a small number of species (from 1 to 5, or 17,4% from ornithofauna of city). Among nesting birds prevail: Passeriformes (43,4%), Anseriformes (15,2%), Charadriiformes (10,1%). On migration representatives of this three groups are dominated, as well as Falconiformes. Groups of summering and migrating birds are represented by 8 orders, the second – 6.

The fauna of birds of the city is very heterogeneous in origin. Most species found on its territory are trans-Palearctic (widely distributed species within the Palearctic).

According to the ecological structure, birds marked in the city are divided into four groups: Dendrophils, Limnophils, Campophils, Sclerophils. The most varied are Limnophils (57 species, or 39,7%) and Dendrophils (65 species, or 44,9%), other 14 species (9,8%) are Campophils, also 8 species (5,6%) belong to Sclerophils.

The most numerous two ecological groups (Dendrophils and Limnophils) were initially distinguished by the great species diversity in the region, and the creation of artificial reservoirs and plantations in Petropavlovsk and beyond allowed the penetration of many forest species (*Falco subbuteo*, *Dendrocopos major*, *D. minor* и *D.s leucotos*, *Picus camis*, *Garrulus glandarius*, *Parus caeruleus*, *P. major*, *Chloris chloris*, etc.) and birds of the wetland complex (*Gallinula chloropus*, *Fulica atra*, *Podiceps grisegena*, *Cygnus olor*, *Netta rufina*, *Larus ridibundus*, *Sterna hirundo*, etc.) into the city.

The variety of sclerophils in the North Kazakhstan region in the past was small, which is associated with sporadic distribution of the biotopes necessary for their nesting - ravines, cliffs and rocks. However, the high ecological plasticity of many of them (*Falco tinunculus*, *Apus apus*, *Hirundo rustica*, *Sturnus vulgaris*, etc.) allowed them to penetrate the city, located in the forest-steppe zone, and successfully master the various structures in it.

Campophilous group is poor. This situation is related to the simplification of the ecological structure of lowland grassland habitats, their low ecological capacity and initially low species diversity of campophiles. Moreover, campophilous group is the most vulnerable in the city, where the factor of anxiety is high and the places suitable for their habitat are constantly shrinking. This ecological grouping is heterogeneous in its composition, in the nesting fauna of Petropavlovsk it is represented by typical steppe (*Alauda arvensis* *Coturnix coturnix*), meadow (*Crex crex*, *Motacilla flava*) and a number of other species penetrating mainly only to the outskirts of the city.

Among the migrating birds, limnophiles predominate (18 species, or 50%). This is undoubtedly due to the geographical location of the city and, in particular, its proximity to the Ishim bed, along which powerful migratory waterways and waterfowl pass. Dendrophils on migration occur less (17 species, or 47,2%). The share of campophiles and sclerophiles is 0% and 2.8%, respectively.

The wintering ornithofauna is composed of dendrophils (14 species or 93.3%), the second is formed by sclerophiles (6.7%), the number of which is 8 times less in comparison with nesting fauna.

An analysis of the distribution of the ornithofauna of Petropavlovsk by groups of abundance has shown that among the nesting birds the share of common species is greatest (46.8%), the proportion of the numerous forms 23%, small and rare 36.7% and 2.5%, respectively.

Among the migratory birds, about half (41.6%) are species with a low numbers. The share of numerous species is small and amounts to only 16.7%. Rare birds also prevail among wintering birds (66.7%).

The species composition of birds inhabiting the city is not the same throughout the year. The greatest number of species was recorded on the territory of the city during seasonal migrations (113 in spring and 121 in summer and autumn). The least amount is observed in the winter period - 29.

Thus, the ornithofauna of Petropavlovsk is very diverse. Its formation is still ongoing. Undoubtedly, in the course of time new species will appear in the list of birds of the city. This is evidenced by the findings of a number of new species – *Pinicola enucleator* and *Loxia leucoptera*, made in 2014-2015 and not included in our work. However, the noted presence of these birds on the territory of the city has a random character, and their role in the formation of ornithofauna is not large. Therefore, their inclusion in the ornithofauna list of Petropavlovsk will not significantly change the characteristics given above.

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ЕТ ЖӘНЕ ЕТ ӨНІМДЕРІНІҢ ҚАУІПСІЗДІГІН ҚАМТАМАСЫЗ ЕТУ ШАРАЛАРЫ

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Аңдатпа

Ет өнімін сатып аларда тұтынушы әдетте оның жастығы мен сыртқы түр түсі, семіз, арықтығы қатарлы шектеулі ғана тауарлық (тағамдық) сапа көрсеткіштеріне қарап тандайды (бағалайды). Яғни тұтынушыға еттің экологиялық қауіпсіздігі беймәлім күйінде қалады. Қандай да бір аурудан аман, дені сау малдан алынған еттің өзі тағамдық өнім ретінде пайдалануға жарамсыз болып шығуы мүмкін. Оның негізгі себептері көбінесе сыртқы әсерлерден туындайды. Мысалы ет өндірісінде қолданылатын тағамдық қоспаларды (нитриттер, фосфаттар, тотығуға қарсы пайдаланатын заттар, ыстау заттары) белгілі мөлшерден асыра пайдаланған жағдайда адам ағзасына аса қауіпті болуы мүмкін.

Түйінді сөздер: пестицидтер, фосфаттар, радионуклидтер, антибиотиктер, ауыр металл тұздары, мырыш, қорғасын,

Аннотация

Покупатель прежде чем купить мясо, уделяет внимание на качество и питательность мясного продукта, оценивая наружный (пищевой) вид, жирность. Конечно, он не обращает внимание на экологическую безопасность мяса. Возможно, мясо не пригодно в пищу, хотя получено от здоровых животных. Воздействие внешних факторов являются частыми его основными причинами. Очень опасными для организма человека могут быть смеси (нитриты, фосфаты, радионуклиды, вещества против окисления и т.др.), используемые выше нормы, которые были предназначены для продукта.

Ключевые слова: пестициды, фосфаты, радионуклиды, антибиотики, соли тяжелых металлов, цинк, свинец.

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