

Seasonal Variation of Zoophilous Flies Population in Ecological Focus Conditions

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Annotation: This article investigates the fauna of zoophilous flies inhabiting ecological focus zones, their seasonal and daily flight activity, the composition of dominant and subdominant species, as well as the veterinary-sanitary significance of these species.

Keywords: zoophilous flies, seasonal dynamics, ecological focus, flight activity, dominant species, subdominant species, Diptera, veterinary-sanitary importance, entomological analysis, livestock farming.

Relevance of the topic Currently, parasitic and transmissible diseases are widespread in many countries and cause significant economic damage to the livestock industry. In particular, effective control of blood-sucking ectoparasitic vectors that transmit such diseases is of both scientific and practical importance. Zoophilous flies (from the order Diptera), which are widespread among livestock and cause considerable harm, pose a serious threat not only as irritants to animals but also as potential vectors of various diseases. A detailed study of the biological and ecological characteristics of these insects especially under ecologically harsh conditions is crucial for identifying their distribution and activity, improving sanitary-hygienic conditions in animal husbandry, and preventing disease outbreaks. In this context, the dynamics of zoophilous fly populations were studied at the ecological focus of the Veterinary Research Institute (VRI) located in Tayloq district of Samarkand region.

Research methods Zoophilous insects collected from farms were taxonomically identified (to phylum, class, order, family, genus, and species) in the arachnoentomology and acarology laboratory using identification keys from the following literature:

- "Synanthropic Dipteran Fauna of the USSR" (A.A. Stackelberg, USSR Academy of Sciences, Moscow, 1956),

- "Identification of Arthropods Harmful to Human Health" (V.N. Beklemishev, Medgiz, Moscow, 1958),
- "Keys to the Insects of the European Part of the USSR" Part I, Volume V (G.Ya. Bei-Bienko, Nauka, Leningrad, 1969),
- Part II, Volume V (G.Ya. Bei-Bienko, Nauka, Leningrad, 1970),
- and "Flies and Disease", Volume I (Bernard Greenberg, Princeton University Press, 1971). Microscopic examination (MBS microscope) was used during identification.

Research results During our scientific studies, dissection of the glass surface of the ecological focus (station)—an area with high insect density and significant human disturbance—was carried out using a 0.025% aqueous emulsion of Cypermethrin 25%. Zoophilous insects were subjected to entomological analysis. As a result, a total of 1,959 zoophilous fly specimens were collected and identified.

Seasonal dynamics of zoophilic insects under ecological station conditions"

Table 3.3.1

№	Species names	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	Jami	%
1	<i>C. vicina</i>		3	4	5	8	354	352	77	16	2	1		822	42
2	<i>F. scalaris</i>		1	6	3	6	153	121	7	6	1			304	15,52
3	<i>F. incisurata</i>	3	3			4	94	89	10	9				212	10,82
4	<i>M. stabulans</i>			4		9	101	75	6	9	5			209	10,67
5	<i>F. leucosticta</i>				1	2	57	20	2					82	4,19
6	<i>F. canicularis</i>					2	63	29	9	2				105	5,36
7	<i>M. domestica</i>			1	1	2	4	6	2	1	1	1		19	0,97
8	<i>B. maculata</i>						1	1						2	0,10
9	<i>P. rudis</i>	1	2			4	11	7	2		1	1		29	1,48
10	<i>L. sericata</i>						6	11	4	3				24	1,23
11	<i>B. haemorrhoidalis</i>						7	15	5	1				28	1,43
12	<i>M. simplex</i>						6	5			1			12	0,61
13	<i>S. calcitrans</i>						3	6	3		2			14	0,71
14	<i>R. striata</i>							6	6					12	0,61
15	<i>Ph. Regina. Mg</i>							3						3	0,15
16	<i>E. tenax</i>						6	4	1					11	0,56
17	<i>M. assimilis</i>						7	2						9	0,46
18	<i>H. dentipes</i>							7	3	2				12	0,61
19	<i>L. titillans</i>						4	2		1				7	0,36
20	<i>D. funebris</i>					1	2							8	0,41
21	<i>D. melanogaster</i>					1	1							7	0,36
22	<i>L. irritans</i>						3	2			2			7	0,36
23	<i>P. casei</i>						2							2	0,10
24	<i>E. cornuta</i>						2							2	0,10
25	<i>P. albiceps</i>						2	1						2	0,10
26	<i>D. asiatica</i>			1	1	1	5	2		1	1			12	0,61
27	<i>M. glabra</i>							2		1				3	0,15
Sum														1959	100

The species *Calliphora vicina* was recorded with the following proportions: 0.36% in February, 0.49% in March, 0.61% in April, 0.97% in May, 43.06% in June, 42.8% in July, 9.36% in August, 1.94% in September, 0.24% in October, and 0.12% in November. The flight activity of this species peaked during the summer months and decreased significantly in the winter.

The species *Fannia scalaris* was observed at 0.32% in February, 1.97% in March, 0.98% in April, 2.3% in May, 50.33% in June, 39.80% in July, 2.30% in August, 1.97% in September, and 0.33% in October. It was also present in November. Its peak abundance was recorded in June and July, while its occurrence in other months was relatively low.

Musca stabulans was recorded at 1.91% in March, 4.30% in May, 48.32% in June, 35.88% in July, 2.87% in August, 4.30% in September, and 2.39% in October. This species was not found during the winter and was mainly active in summer. *Fannia incisurata* was recorded at 1.41% in January and February, 1.88% in March, 44.33% in June, 41.98% in July, 4.71% in August, and 4.21% in September. Like other species, it was rarely encountered during winter, with its highest occurrence in summer.

Fannia leucosticta was absent in March but appeared at 1.21% in April, 2.43% in May, 69.51% in June, 24.39% in July, and 2.43% in August. Its peak activity was observed in June, followed by a decline during the autumn.

Fannia canicularis was not recorded in March and April but appeared at 1.90% in May, 60% in June, 27.61% in July, 8.57% in August, and 1.90% in September. This species also showed peak activity in the summer and lower frequency in spring and autumn.

Musca domestica was observed at 5.29% in March, 5.29% in April, 10.52% in May, 21.05% in June, 31.57% in July, 10.52% in August, and 5.29% in September. It was not found in winter but was most abundant during the summer season.

The seasonal dynamics of other species were analyzed similarly. Among the 27 insect species identified during the study, six were determined as dominant: *C. vicina*, *F. scalaris*, *F. incisurata*, *M. stabulans*, *F. leucosticta*, and *F. canicularis*.

Sixteen species of veterinary and epizootiological importance were classified as subdominant, and five species were considered rare. These species are known mechanical vectors of infectious and invasive diseases affecting livestock. Their ecological characteristics and adaptation strategies to environmental conditions were analyzed.

It was shown that the dominant species reached their highest abundance in June and July, which correlates with their life cycles and favorable climatic conditions. Their habitats, feeding sources, and mobility patterns were also examined.

In total, 1,959 specimens of zoophilic flies were collected at the ecological station. Based on their morphological features, their species identity and taxonomic status were determined. Seasonal distribution data revealed that 13 individuals (0.66%) were collected in winter, 68 individuals (3.47%) in spring, 1,805 individuals (92.13%) in summer, and 72 individuals (3.45%) in autumn (see Figure 3.3.1).

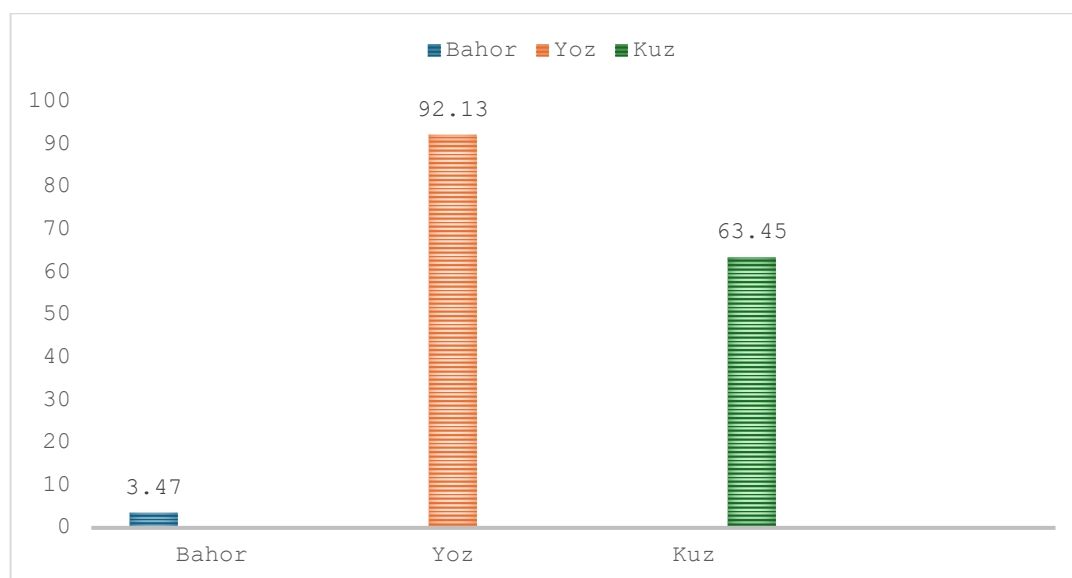


Figure 3.3.1. Seasonal dynamics of zoophilic insects in the ecological site

Conclusion:

As a result of research conducted in the ecological site of Tayloq district, Samarkand region, the fauna and seasonal-daily flight activity of zoophilic flies were studied. A total of 27 species were identified, among which 6 species — *Calliphora vicina*, *Fannia scalaris*, *Fannia incisurata*, *Musca stabulans*, *Fannia leucosticta*, and *Fannia canicularis* — were determined as dominant species. Their flight activity was highest during the summer months, particularly in June and July, while it significantly decreased during winter and cold seasons. This indicates that their life cycle is closely related to climatic conditions.

It was found that a 0.025% aqueous emulsion of **Cypermethrin 25%** does not negatively affect the physiological condition or productivity of animals, while demonstrating 100% insecticidal and larvicidal effectiveness against adult and larval stages of zoophilic flies.

These zoophilic flies, which are of veterinary-sanitary and epizootological significance, serve as mechanical vectors in the transmission of infectious diseases in the livestock sector. Therefore, a comprehensive study of their biological and ecological characteristics, as well as the determination of their seasonal population dynamics, is crucial for preventing livestock-related diseases.

The development and implementation of effective regulatory control measures against zoophilic flies contributes to improving sanitary and hygienic conditions in animal husbandry.

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