

## The spread of parasitic dipteran insects of cattle

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**Goal.** To study the North-Western region of Ukraine as to the distribution and flight periods of blood-sucking dipteran insects, zoophilic flies, and botflies to protect the cattle from their attacks. **Methods.** Field, parasitological, laboratory, and calculation. **Results.** 20 species of gadfly parasite on cattle (fam. *Tabanidae*), which belong to the genera: *Hybomitra*, *Chrysops*, *Tabanus*, *Haematopota*, *Atylotus*, and *Heptatoma*. The flight and attack on the animals occurs from May to September, and the greatest number in July and the first half of August. 35 species of mosquitoes (fam. *Culicidae*) are discovered. The most common of them belong to the genera: *Aedes*, *Anopheles*, and *Culex*. They traced 2 increase in their amount depending on the characteristics of the season: spring (May – June) and summer (July). There are fixed 33 species of midges (fam. *Simuliidae*) on the territory. The genera *Schoenbaueria*, *Simulium*, and *Boophthora* are the dominant ones. Seasonal dynamics of attacks is characterized by two periods of increased activity of the midges — spring (May) and summer (late July – early August). Fauna of malanders (fam. *Ceratopogonidae*) encounters 15 species. Massive attack on the animals is observed in May–June and in early August. 10 types of zoophilic flies (fam. *Muscidae*) are fixed. The most common — licking (*M. domestica*, *M. autumnalis*, *M. larvipara*), and blood-sucking (*S. calcitrans*, *H. stimulans*, *H. atripalis*). They attack from late April to October, the largest number — from the end of June to September. All identified gadflies (fam. *Hypodermatidae*) belong to the same species — *Hipoderma bovis*. They are active mostly in July – August. **Conclusions.** Species composition, number, and timing of flight of blood-sucking dipteran insects, zoophilic flies and gadflies in the climatic zones of North-West region vary. Maximum species diversity was in the area of Polissia: gadflies — 20, mosquitoes — 35, midges — 33, malanders — 15, zoophilic flies — 10, gadflies — 1. The total flight period lasts from late April to October, the maximum activity is fixed in the period from May to September. Measures for the protection of cattle against harmful dipteran insects in the area of Polissia and Forest-Steppe should be taken in May and September.

**Key words:** gadflies, mosquitoes, midges, flies, botflies, species diversity, numerous activities.

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In the system of veterinary and sanitary measures in places where animals are kept, the control of harmful insects is important. Particularly dangerous for cattle are gnats (horseflies, mosquitoes, black-flies, bitingflies), zoophilic flies and gadfly, which lead to a decrease in their productivity and intoxication of the body [1–5]. In addition, ectoparasites are intermediate hosts and vectors of infectious and invasive diseases [6]. The presence of, for example, flies on livestock farms causes bacterial contamination of milk, which reduces its quality [7, 8]. Among the disgust are especially dangerous midges, which in a mass attack cause not only disease – simuliidotoxicosis, but also the death of animals [9]. It is generally accepted that in the conditions of mass spread of disgust livestock becomes unprofitable due to losses in weight gain of young animals by 25–40% and reduction of milk yield of cows by more than 40% [10].

Particularly significant economic losses in the farms of the North-Western region of Ukraine, where there is a favorable environment for the formation foci of mass reproduction and attack of geese and other insects [11]. From ectoparasites animals are damaged throughout the year, but especially in spring and summer.

To successfully control pests, it is necessary to know in detail the entomological situation in a particular area, region, zone – a group of ectoparasites, the area in which they are most common and the factors that contribute to or inhibit their development. Knowledge of the start and end dates of the flight of gnats, flies and gnats is the biological basis for measures to protect cattle from the attack of adults of these insects in the summer. Thus, effective control of harmful dipterans insects is possible only on the basis of studying their fauna, biology and ecology in the specific conditions of a particular area.

**The purpose of the research is** to study the distribution and timing flight of blood-sucking dipterans insects, zoophilic flies and gadfly in the North-Western region of Ukraine to carry out measures to protect cattle from their attack.

**Materials and methods of research.** The work was performed in the field in the North-Western region of Ukraine. In house processing of the material, including identification of collected insects, analysis of own and literature data, was performed on the basis of the Experimental Station of Epizootology of the IVM of NAAS (Rivne).

Flight periods and the dynamics of the number of insects of the gnus complex, zoophilic flies and gadfly were studied by conducting systematic surveys throughout the summer season. Collecting horseflies, mosquitoes, black-flies, bitingflies, zoophilic flies, gadfly was carried out by catching an entomological net with removable bags. In addition to net counts, the activity and dynamics of the number of adult insects were





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