Phytophages and their entomophagous species found in forest biocenosis

Rasul Jumaev[1*] and *Shamsi* Esanbaev[1]

[1]Tashkent State Agrarian University, 100140 Tashkent, Uzbekistan

Abstract. In this article, species-compositions of pests found in velvet forest biocenosis have been identified, of which 48 species have seen more phytophages than others. In this, it turned out that the most affected forest trees are apples, pistachios, walnuts, almonds, Hawthorn, zhiyda. 23 species of parasites-entomophages belonging to 7 families have been identified that effectively control the number of these phytophages. During the studies, 1,180 butterflies, 6,510 eggs, 1,040 worms of different ages were collected and systematic analyzes were carried out in Forest agrobiosenosis from representatives of the genus tangachaganotli (Lepidoptera) from forest trees. 22 types of phytophages have been found to be more common than others. In this, it was known that the most affected forest trees are apples, pistachios, walnuts, almonds, Hawthorn, and nephews. In observations, it was known that in Forest agrobiosenosis, types of pests are more common than in other agricultural crops.

1 Introduction

The global transformation of the environment in the world today, and the rapid assimilation of Medicine by mankind, leads to an increase in the scale of influence of various harmful organisms. The "negative impact of pests" on plants is estimated at 1.4 trillion dollars worldwide, which is 5% of the global gross domestic product [1-3]. Accordingly, one of the urgent problems in our mammagat today is the protection of plants, including needle-leaved trees, shrubs, as well as ornamental hedges and flowers from harmful organisms [4-7].

In Uzbekistan, large-scale reforms are carried out in forestry, special attention is paid to expanding forest biosinosis, building new woodlands, and protecting trees from pests [1-5]. Also, the development and application of new technologies in the growing population of our republic, as well as in the cultivation of wood-bearing forest trees in industry, remains relevant. In this regard, it is important to protect forest trees from pests using effective and environmentally friendly methods [1-7]. The trees in the Velvet Forestry, one of the main woodlands of our country, are distinguished by their variety. The cultivated and wild tree species in the farm are interconnected and form one areal. The area of Forestry is 60,744 thousand ha [7-9].

As a result of the deregulation of forest biocenoses, a sharp increase in a species leads to the death of one or more species of crops, or tree species. And now it may not even take

* Corresponding author: jumaevrasoul@yandex.ru

100 years to replenish this biocenosis and create biodiversity. The expansion of the number of phytophages in woodlands can lead to an increase in the number of its pests, but even in this, cases of imbalance are observed. Of the forest pests currently causing great damage around the world, leaf and body pests are considered to affect the development of forest trees,as well as their long-term figuration [4-7, 10].

Not only forest trees of our country but also tall trees in Gardens located in urban centers, ornamental shrubs, and fruit trees in woodlands, more than a hundred species of representatives of the genus tangachanotli (Lepidoptera) are found and cause great economic damage. The species belonging to the families of the tangachaquanotli genus Eribidae, Yponomeutidae, Cossidae and Tortricidae cause great economic damage in Forest biocenosis [4-7].

According to observations made in the Velvet Forestry of 2016-2019, the species of flying insects in the area and their biological characteristics, species and the influence of various factors in their development in this area, the types of forest trees, the types of insects encountered in their vegitative and generative organs were controlled, samples were collected and analyzed in laboratory conditions [4-7, 11]. In order to solve the above problems, many years of scientific research have been carried out and high results have been achieved.

2 Materials and methods

The area here was divided into forest-covered lands, cultural Woodlands, unincorporated Woodlands, nurseries, sparse woodlands, bald land, arable land, pastures, Waters Place, garden, and vineyards, roads place, populated areas, and other lands. From forest trees, spruce, apple, almond, Chestnut, Birch, poplar, willow, apricot, peach, mansov, saffron, Oak, rosehip, Walnut, Hawthorn, and pistachio were listed. It was noted that these tree species form a velvet Forestry landscape [1-4, 7].

On the territory of the forest, a reference base was created for the large and small sizes, ages, and locations of the most common and listed trees. And in cultural Woodlands, the most common types of insects were listed, and samples were collected from them. Forestry is made up of 7 departments and is listed on a variety of trees. Spruce, birch, poplar, willow, apple, apricot, and other tree species are relatively common here [7-11].

The development of Representatives of the genus Lepidoptera found in Forest biocenosis and the degree of damage to tree species will largely depend on weather conditions and the type of nutrient medium [1-5].

It consisted in collecting materials using the main methods used in the process of carrying out scientific research, conducting observations on the study of the ecology of representatives of this genus in the study of the characteristics of pests and types of parasitic entomophages.

Systematic analysis of the types of parasitic entomophages collected from field conditions, determination of the composition of the species A.P.Sarakina and B.P. The styles of arachkevich were used. 1,180 butterflies of representatives of the genus tangachaganotli (Lepidoptera), 6,510 eggs, and 1,040 worms of different ages 226 hummingbirds were collected during scientific research [1-8].

3 Results and discussion

Data on the Departments of velvet Forestry and their components are presented in Table 1. In velvet forestry, the volatile pest insect species were systematically analyzed in laboratory conditions and divided into different groups in terms of causing damage. According to him,

the sucking, rodent species of Leaf, Body, and root pests, and their development in velvet conditions were studied and analyzed.

In observations made in Spruce, Chestnut, Poplar, and other trees in the foothill areas of the forest, 171 insects were identified in their area. It was noted that there are 47 species of forest pests belonging to 6 families, 32 parasites belonging to 8 families, and 26 predatory entomophages, and the rest (66 pieces) are insects living in butazores and weeds. It was found that a large part of the insects lives in plants in the forest [10, 11].

In hills areas, the density of insects is relatively high, and this density depends on the relative humidity of the air. Some insect species here are quite resistant to environmental factors. It has been observed that the location of trees in the adores and populated areas have different effects on the abundance and scarcity of insects. Especially in this areal, an abundance of entomophagous insects was found, the main of which were parasites.

In the study and observation, the incidence of listed phytophages, their development, damaged forest tree species, the affected part of the trees, and the degree of damage to the forest trees of the pest were determined. The studies were carried out from May to September 2016, and the collected samples were systematically analyzed in laboratory conditions through various sources (Table 1). In this case, 47 types of pests were identified that damage the roots, trunks, leaves, fruits, and branches of trees. In the studies, samples from the night and Day types were collected through Entomological mesh, BUF light handle, and hand light [10,11].

Table 1. Types of harmful phytophages registered in velvet Forestry (Velvet Department, 2016-2022)

#	**Harmful phytophages types**	**Meeting Frequency**	**Damaged tree type**	**Damaged tree organ**	**Pest stage**
1	Melolontha afflicta Medv	+++	poplar, willow, birch	root	larva
2	Rhizotrogus fortis Reitt	+++	apples, almonds, pistachio, Yasna	root	larva
3	Amphimallon glabripennis Ball.	++	apples, nuts, Yasna	root	larva
4	Epicometis turanica Reitt.	+++	pear, apple, Rye	flowers	Beetle (imago)
5	Oxythyrea cinctella Schaum.	+++	Acacia, jiyda, Apple, Hawthorn	flowers	Imago
6	Potosia interruptocostata Ball.	– +	rosehip	flowers	Imago
7	Potosia marginicollis Ball.	– +	apples, quince, Hawthorn, rosehip	flowers	Imago
8	Amphicoma Kuschakevitschi Ball.	++	Hawthorn, rosehip	flowers	Imago

9	BUPRESTIDAE Acmaeodera planidorsis Sem.	–++	pistachio, lard	branches	Imago
10	Acmaeodera flavofasciata Pill.	– +	Juniper	branches	Imago
11	Acmaeodera glasunovi Sem.	++	Acacia, almonds, pistachios, cherry	branches	Imago
12	Anthaxia plavilschikovi Obenb.	–++	Hawthorn, apricot, apple	withered branches	larva, imago
13	Cratomerus intermedius (Obenb.)	–++	Birch	body and horns	larva, imago
14	Cratomerus fedtschenkoi (Sem.)	– –+	cherry, pistachio	branches	larva, imago
15	Cratomerus Elaeagni Richt.	–++	zhiyda, apricot, almond	body and horns	larva, imago
16	Cratomerus juglandi V. Step.	+++	Walnut	body and horns	larva, imago
17	Chrysobothris affinis nevskyi Richt.	+++	quince, pear, cherry, Hawthorn almonds, walnuts	body and horns	larva, imago
18	Chrysobothris nana Fairm.	– –+	Walnut	branches	larva
19	Agrilus pecirkai Obenb.	–++	rosehip	leaves and branches	larva, imago
20	Agrilus pistaciophagus Alexeev et Kulinitsh.	+++	pistachio	branches	larva
21	Agrilusangustulu sIllig.	+++	Tal, Poplar	branches	Beetle
22	MELOIDAE. Teratolytta pilosella tadzhika O. Kryzh.	+++	almonds, pistachios, Hawthorn, cherry	stem, flower, leaves	Imago
23	Teratolytta kaszabi O, Kryzh.	– –+	apples, Hawthorn, apricots	stem, flower, leaves	Imago
24	CERAMBYCID AE Aeolesthes sarta Solsky.	+++	apricot, Walnut, Willow, Poplar, jiyda, Maple, Mulberry, Birch	body	larva

25	Rhopalopus nadari Pic.	– –+	Apples	Body and branches	larva
26	Turanium pilosum Mtt.	–++	cherry, apple, almond	body, branches, root, leaf	larva, imago
27	Xylotrechus namanga- nensis Heyd.	+++	Poplar, apple, almond, jelly, Willow	Body and branches	larva
28	Chlorophorus falder- manni Fald.	+++	zhiyda, spruce, Poplar	body, Horn and leaf	larva, imago
29	Cleroclytus semenovi B. Jak	+++	nuts, apples, Acacia, Mulberry, pistachios	thick branches	larva
30	CHRYSOMELI DAE. Labidostomis stenostoma Wse.	+++	pistachio	Leaves	Imago
31	Clytra opaca Jcbs.	+++	pistachio	Leaves	Imago
32	Smaragdina viridis Kr.	+++	Bodom, yirik	leaves	Imago
33	Smaragdina discolor Sols	+++	almond, peach, Willow, Poplar	Leaves	Imago
34	Cryptocephalus polymorphus Sols.	–++	Willow, Poplar, almond, walnut	Leaves	larva, imago
35	Cryptocephalus tarsalis Wse.	– –+	Rosehip, pear, apple	leaves	larva, imago
36	Thelyterotarsus pallidus Lop.	+++	Acacia, almonds, pistachios	Leaves	larva, imago
37	CURCULIONID AE Auletobius rubrorufi Sols.	– –+	rosehip	Young branches and branches	larva, imago
38	Rhynchites zaiitzevi Kieser.	– –+	Almond	fruits and leaves	larva, imago
39	Corygetus conirostr Form.	+++	shrub trees	Leaves	larva
40	Phyllobius solskyi Fst.	–++	apples, walnuts, almonds, reship	leaves	larva

41	IPIDAE Scolytusscolytus F.	–++	Apple	Body and branches	larva
42	Scolytus tadzhikistanicus Stark.	–++	Apples	Body and branches	larva
43	Scolytus rugulosus v. mediterraneus Egg	+++	apples, peaches, apricots, walnuts, almonds	Body and branches	larva
44	NOCTUIDAE Hyponomeuta malinellus Zell.	+++	Apple	Fruits	larva
45	Carpocapsa pomonella L	+++	apples, quince	Fruits	larva
46	Recarvaria nanella Schiff.	–++	apples, apricots, peaches, almonds	fruit, Bud	larva
47	Tmetocera ocellana F.	–++		Bud	larva
48	Yponomeuta malinellus Zell	+++	apples, pears	leaves	larva

Note: damage rate- (+++) is much, (++) is average, (+) is low.

22 types of phytophages listed have been found to be more common than others. In this, it turned out that the most affected forest trees are apples, pistachios, walnuts, almonds, Hawthorn, zhiyda.

In observations, in Forest agrobiosenosis, types of pests were more common than in other agricultural crops (Table 2).

Table 2. Velvet forest phytophages and their parasite-entomophagous species (Peacock Department, 2016-2022)

#	**Pest type**	**Types of parasites**	**Nutrition specialization**
1	Pine silkworm Dendrolimus pini L.	Microgaster nemorum Hrtg. Pimpla inquisitor Scop.	small and adult worms
		Trichogramma embryophagum, Telenomus nitidulus Thom.	Eggs
2	Pine stepper –Bupalus piniarius L.	Lydella nigripes Fall. Heteropelma calcator Wes.	Worms
3	March icebreaker Melolontha afficta.	Dexia rustica F., Dexia vacua Fl., Dexia canina L., Tiphia femorata F. Scolia hirta., Scolia dejeani L.	Imago, worms
4	Pine Brown pest	Exenteruss cingulatorius Holm., Microcryptus bazizonius Gr.	Worms
5	Pine silkworm Dendrolimus pini L.	Telenomus verticillatus Kieffer. Apanteles ordinaries L. Pimpla instigator F.	egg, 1-year-old wolf, took a hump

6	Mountainworm Porthetria dispar L.	Lydella nigripes Fall, Anastatus disparis Rusch.	Worms, eggs
7	Ringed silk worm Lasiocampa neustria L.	Apanteles spurious Wes.	Worms
8	Mustache with a thin body Agrilusang ustulus Illig.	Spathiusery trocephalus Wessen.	Worms
9	Tree tanning – Zeuzerapyrina L.	Litomastic truncatellus Dall., Schreinneria zeuzerae Ashm.	Worms
10	Ash bark beetle Leperesinus Hylesinusfraxini Panz	Coeloides meloanopus Wer. Dendrosoter protuberans Nees.	Worms
11	Tree stinging – Cossuscossus L.	Xylotachina diluta Meig.	Worms
12	Bark Wasps – Scolytusscolytus F.	Dendrosoter protuberans Nees. Bracon initiatellus Ratz.	mature age imagos
13	Poplar black arrakashi Lygaeonematus compessicornis Ol.	Halocremnus argentatus Gr.	Worms
14	Little Poplar Wonderland-Saperda populnea L.	Cryptus insinuator Gr.	Worms
15	Willow elephant – Cryptorrhynchus lapathi L.	Ephyaltes sp.	Worms
16	Oriental Fruit Tree, leafhoppers on fruit trees	Ascogaster quadridentatus	Worms

In places with high humidity, along with an abundance of arracash, barberry, tunlams, and root pests, their entomophages were also studied. It was noted which family representatives of the parasitic species of entomophages are.

4 Conclusions

Trichogrammatidae family Trichogramma rintoi, T. emriophagum species have suffered. Apanteles sporious Wes, Anastatus disparis Rusch, Microgaster nemorum Hrtg, from representatives of the Braconidae family. Pimpla inquisitor Scop, Heteropelma calculator Wes., Dendrosater pratoberans Nees., Bracon initiatellus Ratz. it became known that the species will meet.

And from representatives of the Scelionidae family, Cryptus insinuator Gr. Aphelinidae family Encarsia partinopea species from the chalcididae family Brachymeria intermedia, Chiropachus colon L., Rhaphitelus maculates Wlk. Representatives of the species suffered.

Litomastic truncatellus Dall from representatives of the Ichneumonidae family, which has its place in biocenosis., Spathius erytrocephalus Wessen., Schreinneria zeuzerae Ashm., Ichneumon abellei Berl, pteromalidae family-Dexia rustica F., Dexia vacua Fl., Dexia Chanina L., Tiphia femarata F. The species such as Lydella nigripes Fall were found to be more likely to encounter and their nutrition was studied while the Scalia hirta, Scolia dejeani L species were also representatives of the Tachinidae family.

In addition, Predators were also registered, and the duration of their occurrence during the year was observed. Parasite-entomophages,on the other hand, were rare in early spring and were observed to reproduce at the end of the season. However, it turned out that in relation to pests, their number is not proportional.

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