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ATTRACTING INSECTIVOROUS AVIFAUNA IN ORCHARDS WITH ARTIFICIAL NESTS

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Abstract

Attracting useful avifauna is one of the methods used in the integrated and organic orchards to control specific pests. To create and maintain an integrated ecosystem require important and sometimes difficult activities in the fruit growing area. A solution for attracting and maintaining insectivorous avifauna is to build and place suitable nesting places. This study aims to present the results of the researches when 48 artificial nests located in different orchards were monitored. Artificial nests were built according to regulations and placed in three orchards from three different locations: Faculty of Horticulture within USAMV Bucharest, Moara Domneasă Ilfov County and Nursery and Fruit Growing Farm Istrița, Buzău County. The results showed that the nesting density and diversity of occupied species were influenced by the orchard habitat but also by the technical parameters of nest construction and position of nests. The highest nests occupation rate was registered in Moara Domneasă orchard and the lowest in the Bucharest, due to the windbreaks presence. In time, all the horticultural ecosystems registered an increase in the occupation rate, the wild birds getting used and the new generations grown in artificial nests accepted them more easily.

• Introduction

Globally, there are over 6,000 species of insectivorous birds species and a recent study estimated the total weight of these birds at 3 million tons; they consume about 400-500 million tons of insects in a year. This quantity seems to be similar to the human consumption of meat (around 400 million tons/ year). There was even a conversion to energy, the equivalent of 2.8 exajoules, equal to the energy consumption of New York City in one year [21].

The fruit grower is primarily interested in the impact of wild birds in the food chain, and about ecology, etiology but also aspects regarding the usefulness of birds [17, 20].

Attracting useful avifauna is one of the methods used in the integrated and organic orchards to control fruit tree specific pests [4]. Creating and maintain integrated ecosystems have important and sometimes difficult activities in the fruit growing area. In the integrated and organic orchards, a solution for attracting and maintaining the insectivorous avifauna is to build and place suitable nesting places.

This study aims to present the results of the researches conducted during the 2015 - 2017 period when 48 artificial nests located in different orchards were monitored.

• Material and method

Artificial nests were built according to regulations and placed in 3 orchards from 3 different locations: Faculty of Horticulture within USAMV Bucharest (L1), Moara Domneasă Ilfov County (L3) and Nursery and Fruit Growing Farm Istrița, Buzău County (L5).

According to the field study, four nests types were built, noted with A, B32, B35 and C (Tab.1). 48 nests were created according to the recommendations of the Romanian Ornithological Society and [16, 12, 19].

Table 1. Artificial nest characteristics

Type	Target/occupant species	Hole diameter (mm)	Inner depth (cm)	Length x width (cm)
A	<i>Cyanistes caeruleus</i> L., <i>Poecile palustris</i> L.	28	16	10 x 10
B	<i>Parus major</i> L., <i>Passer montanus</i> L., <i>Passer domesticus</i> L., <i>Sitta europaea</i> L., <i>lynx torquilla</i> L.	32	16 – 18	12.5 x 12.5
C	<i>Phoenicurus phoenicurus</i> L., <i>Erithacus rubecula</i> L.	100 x 150	8	12.5 x 12.5

• Results and discussions

The nest's occupation rate according to the monitored parameters was performed for each orchard.

Table 2. Nests occupation rate between 2015-2017 (%)

Year	L1	L2	L3
2015	25.0	73.3	52.0
2016	37.5	80.0	64.0
2017	37.5	80.0	64.0
Average	33.3±7.2	77.8±3.8	60.0±6.9

Table 3. Nests occupation rate between 2015-2017 (%) according to nest type

Nest type/ year	L1			L3			L5		
	2015	2016	2017	2015	2016	2017	2015	2016	2017
A	0	0	0	75	100	100	0	50	50
B32	0	50	50	100	100	100	100	100	100
B35	100	100	100	100	100	100	100	100	100
C	0	0	0	0	0	0	0	0	0



Figure 1. Blue tit (*Cyanistes caeruleus* L.) at A type nest (updated)



Figure 2. Great tit (*Parus major* L.) at B35 type nest



Figure 3. House sparrow (*Passer domesticus* L.) at B35 type nest



Figure 4. Tree sparrow (*Passer montanus* L.) at B32 type nest

• Conclusions

The nesting density and diversity of occupied species were influenced by the orchard habitat but also by the technical parameters of nest construction and position of nests. The highest nests occupation rate was registered in Moara Domneasă orchard and the lowest in the Bucharest orchard, due to the windbreaks presence. In time, all the horticultural ecosystems registered an increase in the occupation rate of the artificial nests, the wild birds getting used to them and the new generations grown in artificial nests accepted them more easily.