

IDENTIFYING USEFUL ORNITHOFAUNA IN HORTICULTURAL ECOSYSTEMS DURING WINTER SEASON

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Abstract

*Species of birds that are useful to horticultural ecosystems have been identified between December 2014 and February 2015 in several ecosystems: Agronomie-Herăstrău Campus of the University of Agronomic Sciences and Veterinary Medicine in Bucharest, the orchard of Moara Domnească Didactic Station and the Dendrological Park in Chitila town. Species that are highly useful for plant protection have been identified at feeding hearths specially arranged in the mentioned horticultural ecosystems. Among other species, insectivorous and sedentary species like tit (*Paridae*) and even winter guests in the Romanian Plain such as fieldfare (*Turdus pilaris*) – the latter hygienizing orchards while feeding with fruits in trees or fallen fruits, were observed. The proper identification of useful ornithofauna in a certain horticultural ecosystem is the first step for protecting such an ecosystem and, at the same time, the starting point for devising proper action plans to fight pests in integrated and ecological production systems. For horticultural ecosystems with landscaping architecture, identifying the existing species of birds helps diversifying the recreation alternatives (e.g. bird watching).*

Key words: bird watching, winter guests, feeders.

INTRODUCTION

Beside the agro technical measures and the chemicals used for pest control in plants and animals, an important role in this action of combat plays the useful birds that annually destroy millions of pests. (Cătuneanu, 1952).

The Great Tit (*Parus major*) consumes in all seasons all kind of pest insects: eggs, larvae, caterpillars, flat fleas, beetles and small butterflies. Using the stomach analysis, different species of Curculionidae, small Cerambycidae, small Buprestidae, small Ipide have been found (Cătuneanu, 1952).

After researches done at Romanian Agronomic Research Institute by the ornithologist Ion I. Cătuneanu, one Buzzard (*Buteo buteo*) eats in 50 days about 265 mice while a Little Owl (*Athene noctua*) consumes monthly about 300 mice. One Titmouse (*Poicile palustris*) eats daily a equal quantity of its weight (Radu, 1960).

A garden can attract small birds if there are fruit-trees, trees, and bushes to offer breeding, shelter, and feeding places (Munteanu et al, 2000).

Starting with these premises and pleading for the importance of bird species, we did field observation regarding the identification of useful avifauna during winter in order to lay down several protection measures during birds reproduction season.

MATERIALS AND METHODS

Observation and feeding points localisation during winter

The field observations for useful avifauna identification were done in different places. We have installed two kinds of bird feeders in every point (the models are later described). The bird feeders were refilled almost daily with sunflower seeds.

The observations were realised on the whole studied area, including the surroundings for less than 300 meters in five places:

1. Exotic fruit species orchard - UASVM of Bucharest, surface: 1,600 m² (Figure 1);
2. Apple orchard - UASVM of Bucharest, surface: 1,430 m² (Figure 2);

3. Cherry and apricot orchard - Didactic Station Moara Domnească, Găneasa, Ilfov, surface: 6,600 m² (Figure 3);

4. Botanical Garden and Dendrological Park - UASVM of Bucharest, surface: 39,400 m² (Figure 4);

5. Chitila Dendrological Park – Chitila, Ilfov County, surface: 35,000 m² (Figure 5).

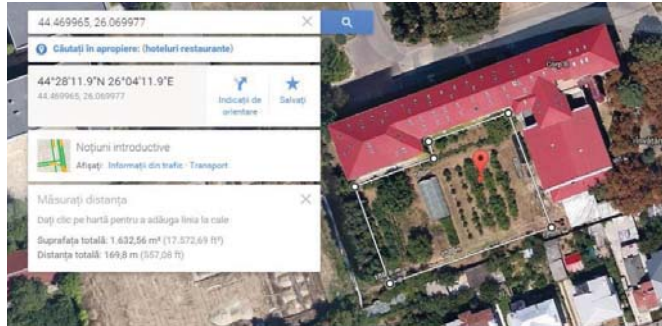


Figure 1. Exotic fruit species orchard - Agronomie-Herăstrău Campus, UASVM of Bucharest

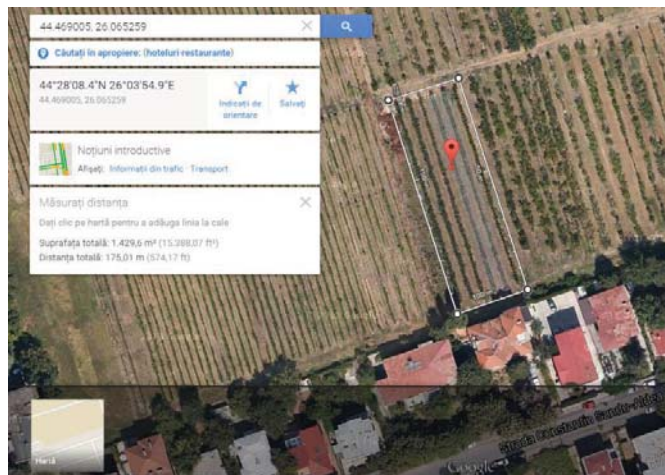


Figure 2. Apple orchard - Agronomie-Herăstrău Campus, UASVM of Bucharest

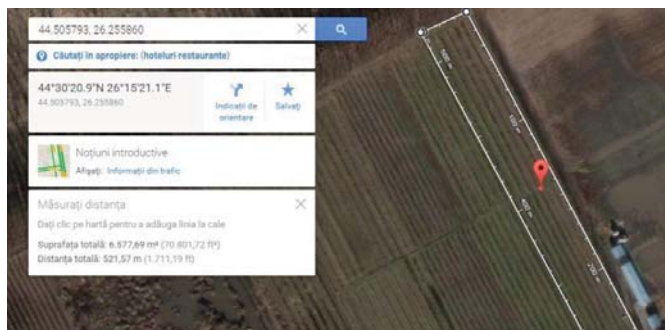


Figure 3. Cherry and apricot orchard - Didactical Station Moara Domnească, Găneasa, Ilfov

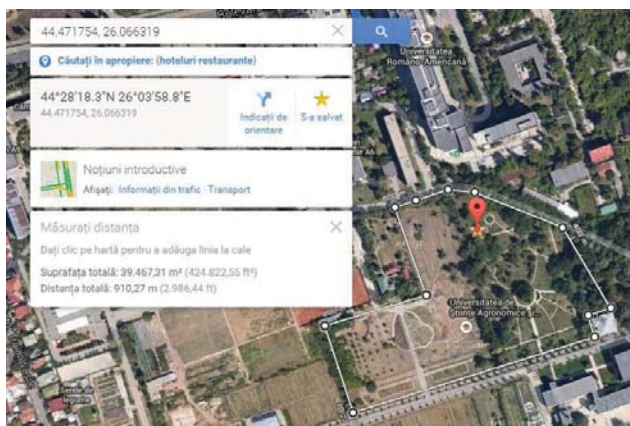


Figure 4. Botanical Garden and Dendrological Park - Agronomie-Herăstrău Campus, UASVM of Bucharest

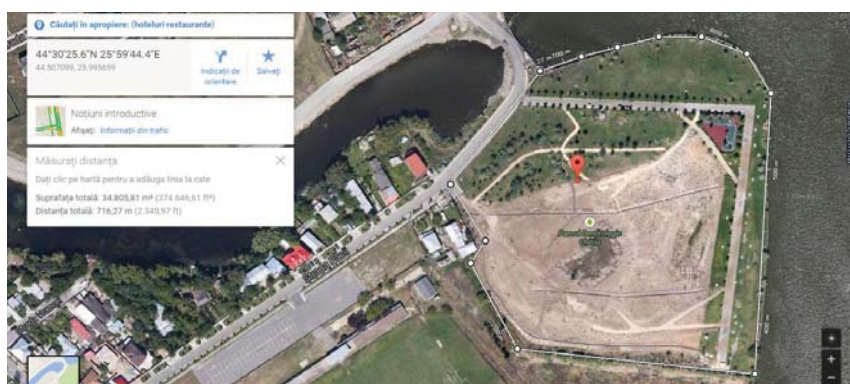


Figure 5. Chitila Dendrological Park – Chitila, Ilfov County

Observations methods

The following equipment and materials were used in order to attract, observe and identify the useful avifauna:

1. Olympus binocular 10X50 DPSI, 10 times zooms with 50 mm lenses diameter;
2. Canon Power Shot S5 IS, Photo Camera, with 8 Gb memory card was used for pictures and videos;
3. „Determinator ilustrat - Păsările din România și Europa”. Hamlyn Guide. Bertel Bruun, Hakan Delin, Lars Svensson, Illustrations by Arthur Singer. Romanian version by Dan Munteanu;
4. „Birds of Europe”, second edition. Princeton Edition. Lars Svensson, Killian Mullarney, Dan Zetterstrom, Peter J. Grant;
5. Birds sounds recorded CD – Birds of Europe, J.C. Roche. Some bird species can be reported only if they were heard. These

recordings are useful when the morphology of the bird is not clearly observed;

5. Bird feeders

Because of the meteorological conditions during winter, could be needed to help birds in finding food. The most vulnerable species are the insectivores and seed eaters. We layed out and built two bird feeders models that fit in the ecological requirements of these two bird cathogories.

5.1. First bird feeder model is designed for *Paride* species, that is called „Titmice bird feeder”. This bird feeder has small holes and small support sticks, these features limiting the number of species that can use it. It is recommended for mounting in the areas with large presence of House Sparrows (Figure 6). The bird feeders were built using pine wood painted with ecological paint for protection. To hang it we used 4 mm nylon string.

Refilling of the bird feeder with seeds is done by lifting the lid.



Figure 6. Titmice bird feeder

The birds use the small sticks placed under the holes to stand while take the seeds from the birdfeeder.

5.2 The second bird feeder model was called „Finch bird feeder” (Figure 7).

This model was intended to be for seed eater birds, but in the area with large numbers of House Sparrows, might not be the best model to use.

This bird feeder has the same concept as the first one, with small differences.



Figure 7. Finch bird feeder

The holes used to take the seeds are placed in the lower part. The dimensions are 0.8x110 mm. To support the birds the base wood board comes out 5 cm on two sides of the bird feeder.

6. Sunflower seeds.

We have used 350 kg of sun flower seeds in order to refill the bird feeders. This kind of seeds are favorite for insectivore, seed eaters and omnivore species. Sunflower seed is nutrient, rich in fats and vitamins and the price is accesible.

7. Observations report

In the field observation report, we have written the observed bird species, the number of birds of each species, weather conditions, the place, the day and the hour and other observations when necessary.

Work method for useful avifauna attracting, observing and identification

Field observations were made three times per month in horticole ecosystems and their surroundings (but no more than 300 meters) taken in study.

Each time, before observations the bird feeders were filled with seeds. Time for observations was minimum 30 minutes.

Observation hours: between 10-11 a.m. the birds are very active, looking for food.

The optical equipment was used for detailed observations when needed.

We reported also the species flying above the ecosystems.

RESULTS AND DISCUSSIONS

At the Exotic fruit species orchard within Agronomie - Herăstrău Campus, UASVM of Bucharest, nine bird species were observed. The higher number of birds (20) was recorded at Tree Sparrow (*Passer montanus*) (Table 1)

Table 1. Bird species observed in Exotic fruit species orchard - Agronomie-Herăstrău Campus, UASVM of Bucharest

No.	Name	Average specimens observed Dec. 2014-Feb. 2015	Presence during the 9 visits	Observations
1	<i>Parus major</i>	8	9	Detailed searching of tree branches
2	<i>Cyanistes caeruleus</i>	3	8	
3	<i>Turdus merula</i>	3	9	
4	<i>Fringilla coelebs</i>	9	5	
5	<i>Fringilla montifringilla</i>	4	3	Winter visitor
6	<i>Passer montanus</i>	20	9	The most common species, being in competition with Tit for food
7	<i>Passer domesticus</i>	15	9	
8	<i>Falco tinnunculus</i>	1	3	Territorial behavior
9	<i>Pica pica</i>	3	3	

Four most common species were observed: Great Tit (*Parus major*), Blackbird (*Turdus merula*), Tree Sparrow (*Passer montanus*) and House

Sparrow (*Passer domesticus*). The rarest observed specie was the Kestrel (*Falco tinnunculus*) with three records.

Table 2. Bird species observed in the apple orchard - Agronomie-Herăstrău Campus, UASVM of Bucharest

No.	Name	Average specimens observed Dec. 2014-Feb. 2015	Presence during the 9 visits	Observations
1	<i>Parus major</i>	2	4	
2	<i>Cyanistes caeruleus</i>	1	3	
3	<i>Turdus merula</i>	2	2	
4	<i>Fringilla coelebs</i>	3	1	
5	<i>Accipiter nisus</i>	1	1	Was sitting watching in a Norway Spruce out of the orchard

At the Apple orchard within Agronomie - Herăstrău Campus, UASVM of Bucharest the total number of bird observed species was five (Table 2). The most common species expressed numericaly was Chaffinch (*Fringilla coelebs*).

The most common species was the Great Tit (*Parus major*) with a frequency of 4 from 9 observations and the rarest species: the Sparrowhawk (*Accipiter nisus*) with a single view.

Table 3. Bird species observed in the Cherry and apricot orchard - Didactic Station Moara Domneasă

Nr. crt.	Name	Average specimens observed Dec. 2014-Feb. 2015	Presence during the 9 visits	Observations
1	<i>Parus major</i>	7	9	
2	<i>Cyanistes caeruleus</i>	8	9	
3	<i>Dendrocopos syriacus</i>	2	3	
4	<i>Sitta europea</i>	2	5	
5	<i>Picus canus</i>	1	1	
6	<i>Buteo buteo</i>	1	4	
7	<i>Accipiter nisus</i>	1	1	
8	<i>Fringilla coelebs</i>	5	7	
9	<i>Turdus merula</i>	5	3	
10	<i>Turdus pilaris</i>	25	9	
11	<i>Pica pica</i>	3	2	
12	<i>Garrulus glandarius</i>	2	3	

Nr. crt.	Name	Average specimens observed Dec. 2014-Feb. 2015	Presence during the 9 visits	Observations
13	<i>Phasianus colchicus</i>	1	6	
14	<i>Passer domesticus</i>	7	9	
15	<i>Passer montanus</i>	14	9	
16	<i>Corvus frugilegus</i>	6	4	
17	<i>Corvus cornix</i>	2	3	
18	<i>Chloris chloris</i>	7	2	

In the Cherry and apricot orchard - Didactic Station Moara Domnească, Ilfov (Table 3), we observed 18 bird species. The most common (numerical) species was the Fieldfare (*Turdus pilaris*) with 25 birds. We found 5 most common species: 5 Great Tit (*Parus major*), Blue Tit (*Cyanistes*

caeruleus), Fieldfare (*Turdus pilaris*), House Sparrow (*Passer domesticus*) and Tree Sparrow (*Passer montanus*). The rarest bird species were the Grey-headed Woodpecker (*Picus canus*) and the Sparrowhawk (*Accipiter nisus*) with a single view, each.

Table 4. Bird species observed in Dendrological Park and Botanical Garden - Agronomie-Herăstrău Campus, UASVM of Bucharest

No.	Name	Average specimens observed Dec. 2014-Feb. 2015	Presence during the 9 visits	Observations
1	<i>Parus major</i>	7	9	
2	<i>Cyanistes caeruleus</i>	2	9	
3	<i>Fringilla coelebs</i>	3	7	
4	<i>Fringilla montifringilla</i>	4	2	
5	<i>Turdus merula</i>	5	7	
6	<i>Troglodytes troglodytes</i>	1	5	
7	<i>Corvus frugilegus</i>	5	3	
8	<i>Accipiter nisus</i>	1	2	Captured a Blackbird
9	<i>Sturnus vulgaris</i>	2	1	In December the juvenils were feeding with <i>Celtis</i> fruits
10	<i>Turdus pilaris</i>	6	3	
11	<i>Phalacrocorax carbo</i>	80	1	Flying from Herăstrău Park
12	<i>Erithacus rubecula</i>	1	1	
13	<i>Coccothraustes coccothraustes</i>	3	2	
14	<i>Dendrocopos syriacus</i>	1	5	
15	<i>Picus viridis</i>	1	2	
16	<i>Pica pica</i>	3	2	
17	<i>Garrulus glandarius</i>	2	1	
18	<i>Passer montanus</i>	10	2	
19	<i>Chloris chloris</i>	5	2	
20	<i>Periparus ater</i>	2	1	

At the Dendrological Park and Botanical Garden located in Agronomie - Herăstrău Campus, UASVM of Bucharest the total number of observed bird species was 2. The most common (numerical) species were the Cormorant (*Phalacrocorax carbo*): 80 birds

flying and terrestrial ecosystem was the Great Tit (*Parus major*) with 7 birds. The most common species were Great Tits (*Parus major*) and Blue Tit (*Cyanistes caeruleus*) while the rarest species was the Robin (*Erithacus rubecula*)

Table 5. Bird species observed in Dendrological Park, Chitila, Ilfov

No.	Name	Average specimens observed Dec. 2014-Feb. 2015	Presence during the 9 visits	Observations
1	<i>Parus major</i>	12	9	
2	<i>Cyanistes caeruleus</i>	4	9	
3	<i>Coccothraustes coccothraustes</i>	1	5	
4	<i>Fringilla coelebs</i>	5	5	
5	<i>Fringilla montifringilla</i>	4	4	
6	<i>Cygnus olor</i>	20	3	The largest number: 52 birds
7	<i>Pica pica</i>	2	4	
8	<i>Garrulus glandarius</i>	1	3	
9	<i>Dendrocopos major</i>	1	3	
10	<i>Larus michahellis</i>	30	3	
11	<i>Chroicocephalus ridibundus</i>	43	3	
12	<i>Casmerodius albus</i>	1	4	
13	<i>Ardea cinerea</i>	8	3	
14	<i>Emberiza schoeniclus</i>	5	2	
15	<i>Lymnocyptes minimus</i>	1	1	Passage species
16	<i>Ciconia ciconia</i> *	1	1	Observation by Cristian Mihai
17	<i>Ciconia nigra</i> *	1	1	Observation by Cristian Mihai
18	<i>Tadorna tadorna</i> *	1	1	Observation by Cristian Mihai
19	<i>Carduelis carduelis</i>	10	1	
20	<i>Turdus pilaris</i>	30	2	
21	<i>Phalacrocorax pygmeus</i>	20	3	
22	<i>Phalacrocorax carbo</i>	15	3	
23	<i>Anas platyrhynchos</i>	33	3	
24	<i>Larus canus</i>	6	1	Winter visitor
25	<i>Falco columbarius</i>	1	1	Winter visitor

*Observations made by another ornithologist

In the Dendrological Park, Chitila city, Ilfov, the total number of observed bird species was 25. The most common (numerical) species: (43) Black-headed Gull (*Chroicocephalus ridibundus*) aquatic species and (30) Fieldfare (*Turdus pilaris*) terrestrial species. The most

common species were (12) Great tit (*Parus major*) and Blue tit (*Cyanistes caeruleus*). The rarest observed species were the Merlin (*Falco columbarius*) and Jack Snipe (*Lymnocyptes minimus*).

CONCLUSIONS

1. In the ecosystems with a great plant species diversity and with shelter belts, the number of bird species and specimens is much greater than the number in those with monocultures and without shelter belts.
2. The Great Tit and the Blue Tit are the most frequent species in all horticole ecosystems – they are two very useful species for the protection of horticole plants against pests.
3. In larger orchards, the Fieldfare is the most common specie and also as number of individuals – it shouldn't be dismissed since doesn't harm the fruit-trees. The Fieldfare

comes from the north that feeds during the winter with the fallen fruits or left in the trees. It shouldn't be mistaken for the Starling (*Sturnus vulgaris*) – especially that the Starling is gone in warer areas during the winter in our country.

4. In the horticole ecosystems with landscape architecture, the number of species is higher where there is lake, with a considerable surface. As it was seen in the Dendrological Park of Chitila city, although is a young ecosystem, it managed to change the balance regarding the number of observed species. That brings a plus to it's leisure value.

5. While talking with the managers and workers of these horticole ecosystems, we observed how little these people know about birds and the benefits they can bring. One common example is Fieldfare dismissed from the orchard being confused with the starlings.

6. After identification of species, we can improve the breeding, feeding and shelter conditions for the species that are important especially in the horticole plants protection or to vary the leisure in the public parks and gardens.

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