Birds and bats: The orchard pest patrol

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Several bird species can be precious allies for pest control in an organic orchard. The list of bird allies includes: woodpeckers, tits, swallows, wrens, and certain raptors. Even bats, which are not birds of course, are useful for controling pests.

To really benefit from these creatures, it is essential to be able to identify them, and to know ways to encourage and maintain their presence in an orchard.

Winter allies

While most insectivorous birds fly south for the winter, some like woodpeckers and tits stay during that period. Several studies done in eastern Canada have shown that bird predation, especially by woodpeckers, is the greatest mortality factor for codling moth pupae in the winter (Leroux et Mailloux, 1960; MacLellan, 1959; Boyce, 1941). Downy and hairy woodpeckers search orchards for pupae located in tree trunks and other hibernation sites. Depending on the year and the orchard, their predation can destroy between 50 and 95% of the pupae. In certain orchards examined by researchers, woodpeckers were so efficient that no spraying against codling moth was necessary in the following growing season.

The predation of codling moth pupae by tits is better documented in Europe than in North America. In the UK, Solomon (1976) observed a 95% reduction of the larvae population in an unsprayed cider orchard due to tit predation. Excellent results were obtained in the Czech Republic by placing artificial nests for two kinds of tits for the winter (Prskavec et Kneifl, 1989). On an eight-year period, predation by tits destroyed an average of 89% of the pupae. Damages in the following season affected less than 2% of the apples.

In eastern Canada, however, winter predation by tits and woodpeckers can be impaired by snow cover, the pupae of the codling moth being inaccessible under the snow. But, the pupae at ground level can be predated by voles and mice.

Summer guild

In the summer, tits and woodpeckers continue with their good work in the orchard. For example, a family of tits can eat more than 35 kg of caterpillars in a year. Several other bird species are also very active at that time.

Black swallows, also insectivorous birds, live in colonies. Condo type birdhouses are suitable for them. Once a colony is established, the young ones will come back to the same place year after year. More birdhouses then have to be provided. It is, however, very difficult to establish a black swallow colony if there is no lake or large pond in the vicinity.

It is not as easy to attract sparrows to an orchard because they are omnivorous. In fruit production areas, insects represent approximately 35% of a sparrow's diet. In the nesting period, this could go up to 50%. Therefore, sparrows are efficient predators mostly from May to July. The rest of their diet is composed mainly of weed seeds. The major problem with sparrows is that they compete for nesting sites with birds that are strictly insectivorous.

Other bird species that are very useful for insect pest control are warblers, wrens and tree swallows. A species like nuthatch, that inhabits woodland rather than orchards, can also be very valuable for reducing insect pests.

Raptors and bats

Raptors are very useful against field rats, mice and other rodents. Saw-wet owls eat one mouse a day. American kestrels are even more efficient in our regions. They also eat a lot of grasshoppers. The birdhouses for these birds should not be placed in the orchard, but rather around the orchard because their constant presence can scare other birds.

Bats are out at dusk, at the same time as when moths like the codling moth, the leafrollers and the green fruitworm moth, all important apple pests, are out. The speed and refined detection system of the bats makes them excellent hunters. Bat houses must be placed at a height of 3 to 4.5 meters (10-15 feet) facing south. The biggest problem is to provide them with suitable hibernation conditions.

How to encourage them

Ten to fifteen birdhouses to the hectare must be set up in order to attract different species of birds. As indicated in the following table, the dimension of the opening of the birdhouse will determine the species that will occupy it.

Birdhouses are preferably made out of one-inch thick wood to provide some insulation. It is important to leave openings at the top for aeration and drainage holes at the four corners of the floor. To obtain plans for birdhouses or even sometimes free birdhouses, contact your local bird watching club. Certain specialized stores for bird lovers also have plans for birdhouses and bat houses.

Ideally, birdhouses should be placed at a height of 1,80 m (6 feet), either on trees or on posts. It is better to have the entrance facing south-southeast.

Table 1

Diameter of birdhouse openings

Diametre		Bird species
cm	inches	
1.9	0.75	Wrens
2.5 to 3.8	1 to 1.5	Tits
3.8	1.5	Bluebird, tree swallow, sparrow
6.3	2.5	American kestrel
10	4.0	Saw-wet owl

Shelters

One of the main obstacles to efficient control of insects by birds in an orchard is the lack of shelters. Most species have an efficient hunting distance of about a hundred feet. They will fear getting further from their nest unless there are shelters. If such shelters are only found around the orchard, as for example a windbreak or a woodlot, then their action will be felt only around the orchard. Cedar bushes placed in an orchard make excellent shelters. Small insectivorous birds like yellow warblers will prefer shrubs with dense foliage (e.g.: hazelnut, honeysuckle). Piles of pruning wood that are usually destroyed are also possible shelters for birds. Around the orchard, dead trees of a good diameter (8" and more) will attract woodpeckers and allow raptors to perch. Leaving certain apple trees with denser foliage will favor robins.

Perches

Perches are needed for raptors to spot rodents. They can be made by recycling old telephone posts on top of which you nail a couple of two-by-fours. Wires can also be set between the posts. Two to three 20 feet long posts to the hectare will suffice.

Water and feed

In the winter, tallow should be placed in the orchard to help tits and woodpeckers do their predation work on codling moth pupae. If you add sunflower seed with the tallow, this will attract sparrows and possibly less desirable granivorous species.

In the summer, water spots will also help the birds do their job. For orchards equipped with irrigation systems, it is easy to place shallow containers here and there (e.g. plastic cans cut in half lengthwise) in which you place various sized stones and pebbles so that all kinds of birds can drink without drowning.

To conclude, wild birds can play an important role in orchard protection when the most beneficial ones are targeted and encouraged to be there.