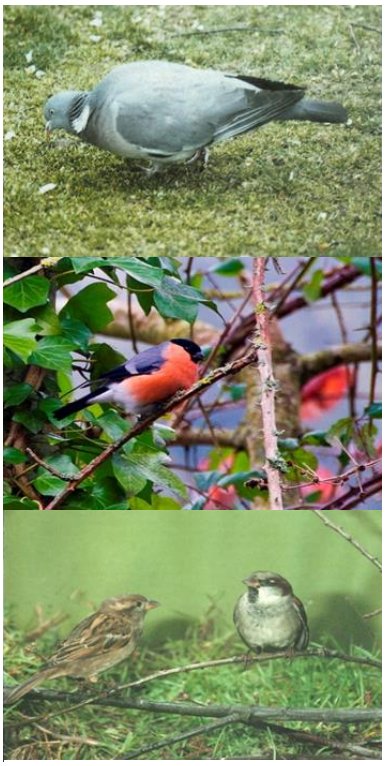
The Best Practice Guide for UK Plum Production
Pests: Birds

Adam Peter, NIAB EMR

Introduction



Figures 1, 2 & 3: wood-pidgeon (top), male bullfinch (middle) and male & female house sparrow.

A number of common UK bird species have been observed in causing damage to plum trees and fruit. The main associated species include wood-pidgeons (*Columba palumbus*), bullfinches (*Pyrrhula pyrrhula*), house sparrows (*Passer domesticus*) and to a lesser extent starlings (*Sturnus vulgaris*). These species have a widespread distribution across the UK; however, populations of bullfinches have declined significantly since the 1970s. Species within the crow family have also been known to cause minor damage. Newly emerging threats include the non-native ringed-necked parakeet (*Psittacula krameri*) with populations currently localised within South-East England.

Feeding habits of these birds are typically generalist and can vary depending on availability of their preferred natural food (such as bramble). Nesting sites are variable between species, found within a variety of habitats. However, highly vegetative hedgerows will commonly have high density of nests during breeding season (typically April to September).

Birds are most likely to cause significant economic losses to plum orchards during bud development, between the months of March to May. However, damage can continue throughout the growing season all the way up to harvest. Outside of the growing season, bullfinches are particularly attracted to newly formed buds between the months of November to March. Growers should remain vigilant for symptoms of bird damage all year round.

Nature of damage

Both fruiting and non-fruiting buds are an attractive food source for bullfinches and house sparrows. Individuals feed inwards on a branch, systematically removing every bud and then moving on to the next branch. Often only the apical bud remains. It has been observed that groups of bullfinches can peck off buds at a rate of 30 per minute, showing that major damage can occur across a very short timeframe. Buds are removed whole; however, only the kernel is eaten. Discarded scales of the bud can be seen on the ground. Trees can be left void of any buds depending on the bird's behaviour, with highest concentration of damage often on trees close to hedgerows. This can mean that some areas of an orchard can be heavily damaged, whilst other areas are left untouched. This type of damage is likely to occur during Winter

months. During Spring, multiple bird species have been observed to remove fruiting bodies during bud burst, blossoming and early fruitlet stages.

From April to July, several species (but most notably the wood-pidgeon) can cause vegetative damage to trees. Leaves are either pecked at (multiple holes evident) or removed whole and then ripped apart, creating debris on the ground below. If there is no evidence of insect presence then it is likely this damage has been caused by birds. Newly formed stems are also either pecked at or damaged from holding the weight of the bird. When left unmanaged, this can drastically reduce crop yield and make trees potentially more susceptible to disease. It is unclear why birds perform this behaviour, meaning it can be prove challenging to deter without netting.

Bird damage on plum. (Source: A. Buckingham)

Towards fruit ripening (July onwards, depending on variety) starlings and wood-pidgeons can target the fruit as a means of feeding. Evidence of this includes removal of fruit, with fruit either completely removed from an area or on the ground, beak shaped holes in the fruit (visibly very different from insect damage), or larger splits that have formed from smaller beak holes. This behaviour is more common within cherry orchards opposed to plums; however, particular attention should be paid in areas commonly associated with other types of bird damage.

Methods of Control

Numerous forms of control vary in suitability and success, with many factors to consider before deciding a course of action. A combination of rotational management practices will usually deliver best results. Many of these methods are interchangeable with other top fruit orchards. Available practices can be grouped in one of four categories: bird scaring, exclusion measures, population control and habitat management.

Bird Scaring

Scarers are categorised in to either audio or visual products. A wide range of commercial products are available within both groups. When introduced, scarers are highly effective. However, over time birds will begin to habituate towards scaring stimulus, meaning they'll eventually ignore them and present a threat to plum orchards. The best deterrent effect is obtained by using a variety of deterrents and rotating their position within an area. Visual products should appear lifelike, have motion and be highly visible within an orchard. It is also important to introduce scarers before birds develop feeding habits. Regular human activity in the vulnerable areas (such as manual non-lethal shooting) is also key in preventing habituation. The faster the firing rate of audio scarers, the more likely birds will habituate: therefore, audio scarers should not be operated more frequently than once every 15-20 minutes. See below for a list of product types and corresponding notes:

Product Type	Audio or Visual?	Description and commercial products available	Notes:
Distress / predator calls	Audio	A random loop of recorded distress and predator calls. Systems often have multiple speakers. Covers 1 – 5 ha.	Possibility that other predator birds attracted by distress calls.
Electronic / ultrasonic noise	Audio	Randomly plays electronic sounds, either audible or ultrasonic. Systems	Ultrasonic sounds are available, however it's

		have multiple speakers. Covers 4 – 12 ha.	believed birds have same hearing range as humans.
Gas powered scarers	Audio	Emits loud noise powered by gas cylinder and funnel.	
Scarer Tape	Audio	Line of tape (up to 500m) that is stretched and hung. When vibrated by wind it produces a bird deterring sound.	Cheaper audio deterrent.
Audible scarecrows	Audio & Visual	Electronically operated scarecrow, emits loud noise.	Can be effective with or without sound.
Banger ropes	Audio	Emulates various gun noises. Set up in most vulnerable areas. Ropes typically last up to 12 hours once lit.	Short term deterrent (i.e. not long lasting).
Predatory bird kites	Visual	Hung from ground or held from helium. Set up 1 kite per ha.	High winds may damage units.
Reflectors	Visual	Uses sunlight reflection to deter birds.	Hang CD's as a cheap alternative.
Eye-spot scarers	Visual	Balls or balloons with eyespots, tied to either vegetation or poles.	Cheap. Eyespot and reflectance combination products are effective.
Scarecrows	Visual	Classic bird scarer.	Make as lifelike as possible for best results.
Hawking	Visual	Natural form of pest control where birds of prey are used to disperse pests without killing them.	Several pest control providers offer this service.

All growers should be considerate not to cause public nuisance when using any form of scarer. See the NFU Code of Practice for bird deterrents and bird scarers for guidelines.

Exclusion Measures

Covering the canopy of plum trees with a form of polyethylene mesh netting physically prevents birds from gaining access. Netting is especially useful if scarers prove to be ineffective in preventing bird damage. Nets are available from a large number of suppliers and can vary in size, shape, material etc. They can be set up in a variety of different manners, from single-row drape-over netting to purpose-built permanent total exclusion netting systems. The scope of what netting system is acceptable should reflect the scale of the pest problem. If bird damage is minor, you may wish to invest only small amounts in netting. Setting up nets can be expensive and labour intensive. They can also interfere with pruning, spraying and fruit picking. However, if birds are a persistent problem, investing heavily in netting is an effective prevention method without the need for regular monitoring. Heavy-duty forms of netting are recommended against wood-pidgeons. If bullfinch damage is prevalent, use mesh no greater than 1 inch (25.4mm) and place nets from November to March. Use finer-mesh nets if birds are continuously trapped within conventional nets.

In the past, growers draped cotton and rayon threads around branches to discourage birds from roosting on plum trees. A common issue with this practice is that non-pest birds would entangle themselves on the threads. Additionally, the threads can interfere with fruit picking. Cottoning is now not a widely used deterrent.

Population Measures

Trapping and shooting birds are alternative means of control which should only be considered when scaring and exclusion measures prove to be unsuccessful against managing damage from birds. However,

the Wildlife & Countryside Act 1981 protects all wild birds and their nests from intentional harm. Those birds listed in Part 2 of Schedule 2 (which includes wood-pidgeons and house sparrows) can be removed by authorised personnel (i.e. those with a general licence). General licences can be obtained through application to Natural England. More specific class licences can also be obtained to trap or shoot birds not listed on Part 2 of Schedule 2.

Shooting a small number of birds can be a useful method for breaking up dense populations of birds when combined with non-lethal shooting and human presence. For best results, carry this out in Autumn. A shotgun loaded with trapshooting cartridges is recommended. For smaller birds (e.g. bullfinches), a No. 8 shot should be satisfactory.

Eggs and nests can be destroyed (again, only with permission from Natural England). For best results, nests should be destroyed on a regular basis between May and August.

Live trapping is an alternative, more humane method of controlling populations. The most suitable type of trap for use will depend on what species is being targeted. Guidelines for best use (e.g. optimal trap positioning) will also vary depending on the type of trap. Live trapping should be seriously considered over lethal control when targeting less common species (such as bullfinches).

Note: there are currently no approved chemicals / pesticides available for use against wild birds. In previous years certain spray formulations were available for use. However, these treatments were often unsuccessful in controlling birds.

Habitat Management

Removal of low-lying vegetation (such as bramble) can greatly reduce an orchard's attractiveness to birds. This should be carried out within the most vulnerable areas of an orchard. Management to tree boundaries, hedges and windbreaks should also be considered if dense populations of birds are present. However, growers should be considerate of the environmental implications of removing vegetation. These areas can be a valuable habitat for non-pest species, including beneficial organisms.

Disclaimer

The information contained within this Best Practice Guide is correct to the best of the authors' knowledge at the time of compilation but it must be understood that the biological material/systems and the regulatory framework referred to within these guides are subject to change over time. Anyone looking to make use of the information should check it against prevailing local conditions.

All pesticide recommendations and approvals are subject to change over time and the user of this Guide is reminded that it is his/her responsibility to ensure that any chemical intended for use by them is approved for use at the time of the intended application. The user is reminded that they must carefully read and follow the label on each chemical before applying any treatments.