

15. Family CURCULIONIDAE (true weevils)

The largest and most important family of weevils, with members characterized by their geniculate (elbowed) antennae which, unlike those of other weevil families, have a very long basal segment (scape); the rostrum (snout) is sometimes very long and the body often clothed in scale-like hairs. Larvae are apodous, with a well-developed head, and often adopt a C-shaped posture. Specific differences in the immature stages are usually slight, and larvae of closely allied species are often difficult if not impossible to separate with any degree of certainty.

In addition to those detailed below, many other weevils are also associated with fruit crops in Europe, usually as minor or occasional pests. In particular, these include a number of additional species within the genera *Otiorhynchus*, *Phyllobius* and *Polydrusus*. Their life cycles are essentially similar to those of their close relatives, as is the damage that such species may cause.

Anthonomus piri Kollar (298–299)

Apple bud weevil

An important pest of pear in mainland Europe. In Britain, where this weevil is very local and rare, apple is attacked and pear is not a recorded host.

DESCRIPTION

Adult: 4.5–6.0 mm long; brownish or purplish red, clothed with golden, black, brown and white hairs, the latter forming a pale band across the elytra.



298 Apple bud weevil (*Anthonomus piri*).



299 Apple bud weevil (*Anthonomus piri*) – damaged bud.

Egg: 0.8 × 0.6 mm; bean-shaped and creamish white.
Larva: up to 7 mm long; creamish white, with a dark brown head; body fleshy and noticeably wrinkled, and more strongly C-shaped than that of *Anthonomus pomorum*.

LIFE HISTORY

Young adults are active in May and June. They feed on apple foliage for a few weeks and then seek shelter in which to aestivate during the summer months. The weevils reappear in September; eggs are then laid singly, each at the base of a small puncture made near the middle of a new fruit bud. The eggs hatch in October. Larvae then feed briefly on the fleshy tissue within the buds before hibernating; the larvae recommence feeding from late February or early March onwards, individuals becoming fully grown by the end of April. Pupation takes place in April and May within the shelter of an unopened bud, and the adult emerges about a month later.

DAMAGE

Adults make small punctures in leaf petioles, buds and spurs; this causes leaves to drop prematurely and may also result in bud death. Buds infested by larvae are hollowed out and fail to open, remaining as dead husks within which, in early spring, the immature stages of the weevil may be found. A circular exit hole, through which the young weevil emerged, is clearly visible in the side of a vacated bud.

Anthonomus pomorum (Linnaeus) (300–303)

Apple blossom weevil

An important and potentially destructive pest of apple. Cultivated apple and *Malus sylvestris* are the normal hosts; however, pear, quince and, sometimes, medlar are also attacked. Present throughout Europe.

DESCRIPTION

Adult: 3.5–6.0 mm long; dark brown to black, covered with brown, greyish and whitish hairs, forming a whitish, and mottled, V-shaped mark across the elytra; a prominent whitish spot between the elytra and thorax.
Egg: 0.7 × 0.5 mm; oval, white and translucent.
Larva: up to 8 mm long; body mainly white, but tending to yellowish when fully grown; head dark brown.
Pupa: 4–5 mm long; pale yellow.

LIFE HISTORY

Adults hibernate under tree bark, in crevices in posts, beneath debris and in other shelter, often migrating in numbers to suitable places in adjacent woods, hedgerows and ditches. They reappear from February onwards and are then active on warm days, flying about

in search of host trees. If weevils arrive prior to bud burst, they wait for the bud scales to open before feeding. Eggs (about 40 or 50 per female) are laid singly from bud burst onwards, each inserted through a small puncture in the side of a flower bud and placed in a groove made by the female on an anther lobe. Eggs hatch within 10 days. The young larvae graze on the developing anthers and styles, and then attack the petals to form the familiar 'capped' blossom. The larvae are fully grown after about a month and then pupate within the shelter of the capped flowers. Adults emerge 2–3 weeks later, young weevils reaching their greatest numbers by mid-June. After feeding on the underside of apple leaves for about 3 weeks, the weevils disperse and take up their winter quarters. A few weevils from the parent generation may also survive the oncoming winter.

DAMAGE

The presence of brown, capped blossoms, formed after the larvae have nipped the petal bases to arrest their development, is characteristic of this pest. Light infestations are of little importance and in years of abundant fruit-set the pest may have a beneficial



300 Apple blossom weevil (*Anthonomus pomorum*).



301 Apple blossom weevil (*Anthonomus pomorum*) – larva.



302 Apple blossom weevil (*Anthonomus pomorum*) – pupa.



303 Apple blossom weevil (*Anthonomus pomorum*) – 'capped' blossom.

thinning effect. However, when infestations are heavy, all except the most advanced flowers on the blossom clusters are destroyed and crops will be devastated. Adult feeding punctures in buds are distinctly larger than those drilled for egg-laying; they are rarely harmful on apple, but pierced pear buds tend to exude much sap, become distorted, and finally shrivel and die. Damage to foliage in early summer is restricted to the lower surface, the upper epidermis remaining intact. Occasionally, young adults drill shallow holes into the developing fruitlets; however, such damage is not serious.

***Anthonomus rubi* (Herbst) (304–306)**

Strawberry blossom weevil

A locally important pest of strawberry. Blackberry and raspberry are also attacked. Eurasiatic. Widely distributed in Europe.

DESCRIPTION

Adult: 2–4 mm long; black, with a scattered greyish pubescence; at once distinguished from (*Neocoenorhinus germanicus*) (family Rhynchitidae) by body colour and by the geniculate antennae. **Egg:** 0.5 × 0.4 mm; oval,



304 Strawberry blossom weevil (*Anthonomus rubi*).



305 Strawberry blossom weevil (*Anthonomus rubi*) – partly severed pedicel.

white and translucent. **Larva:** 3.5 mm long; body dirty creamish white, noticeably C-shaped and wrinkled; head light brown.

LIFE HISTORY

Adults are active in warm, sunny weather from late April onwards, reaching peak numbers by late May. At first, they feed on strawberry foliage; later, flowers are also attacked. Eggs are deposited singly in unopened flower buds, mainly in June. As soon as an egg is laid, the female crawls a short distance along the flower stalk (pedicel) which she then girdles with several small punctures. Damaged buds cease to develop and either fall to the ground or remain dangling from the partially severed stalks. Eggs hatch in about 5–6 days and each larva (typically one per bud) feeds on the shrivelled receptacle and other floral parts beneath the sheltering canopy of withered sepals and petals. Larvae develop rapidly and are fully fed in about 2 weeks. Each then pupates in situ, a new generation of adults appearing about 2 weeks later. After feeding for a few weeks, the young weevils seek shelter amongst dead leaves and other debris, where they remain until the following spring. Attacks on blackberry and raspberry follow a similar pattern, but tend to occur somewhat later in the season.

DAMAGE

Adults make characteristic small round holes in the leaves and petals, but such damage is unimportant. Destruction of flower buds by egg-laying females, however, is more serious. **Strawberry:** early blossoms are particularly liable to be attacked and losses of 'king fruits' on cultivars such as Royal Sovereign may be significant; however, damage to more even-ripening cultivars is far less important. Strawberry cultivars



306 Strawberry blossom weevil (*Anthonomus rubi*) – petal damage.

producing few flowers (e.g. cv. Domanil) are most seriously affected, more prolific-flowering cultivars tending to compensate for the loss of early blossom. **Blackberry and raspberry:** most damage occurs on the lateral spurs; primary blossoms tend to escape attack, as the weevils migrate to these hosts somewhat later in the season.

***Barypeithes araneiformis* (Schrank)**

Smooth broad-nosed weevil

A minor pest of strawberry and, less frequently, raspberry. Widespread and locally common in central and western Europe.

DESCRIPTION

Adult: 3–4 mm long; shiny and virtually glabrous (cf. *Barypeithes pellucidus*), varying in colour from brownish yellow to black; body oval, with a short snout and a distinctly pointed abdomen.

LIFE HISTORY

Adults overwinter in the soil, appearing in strawberry plantations from February onwards. They then browse on the foliage. Eggs are laid in the soil and the larvae later feed on the roots of various weeds, including *Trifolium repens*. Second-generation adults appear in June and, in strawberry plantations, these often attack the developing fruits.

DAMAGE

Adult feeding on leaves is of little or no consequence. Attacks on the fruit, however, are of some importance. Green fruitlets are damaged, the weevils boring into the flesh to form small cavities characteristically wider than their entry hole. Although adults sometimes occur on apple trees, here they do no harm.

***Barypeithes pellucidus* (Boheman) (307)**

Hairy broad-nosed weevil

This locally common species occurs on the foliage of raspberry and strawberry, and is sometimes numerous in plantations during May. Damage, however, is unimportant. Adults (3–4 mm long) are very similar to those of the previous species, but distinguished by the longer, denser and more upright pubescence. The larvae are associated with *Medicago lupulina*.

***Curculio elephas* (Gyllenhal)**

A pest of chestnut in mainland Europe. Also associated with *Quercus*. Widely distributed in central and southern Europe; also present in North Africa.

DESCRIPTION

Adult: 6.0–10.5 mm long; ash-grey to yellowish grey; elongate-oval, with an extremely long, slender, curved rostrum. **Egg:** 0.45 × 0.35 mm; elliptical, white. **Larva:** up to 12 mm long; body white, plump and wrinkled; head brown.

LIFE HISTORY

Adults emerge from pupae in June, July or early August, but any overwintered adults appear somewhat earlier, usually in May. Eggs are deposited singly (rarely in twos or threes) in the fruits of chestnut from August to October, each egg being placed deeply within the tissue at the base of a tunnel-like hole bored into the developing fruit by the egg-laying female. On *Quercus*, the life cycle is somewhat different and egg-laying occurs from July onwards. Following egg hatch, the larvae feed for 4–6 weeks, typically in September and October. When fully grown they vacate the fruits and enter the soil, where they hibernate in earthen chambers formed several centimetres below the surface. Pupation occurs in the following June or July, but some larvae may remain in situ for a further one or two winters.

DAMAGE

Adults browse on the foliage of host plants, typically biting out holes in the major leaf veins and causing distortion; the adults also feed directly on the developing fruits. Larvae bore within the inner tissue of the fruits, forming frass-filled cavities; in the case of heavy infestations, crop losses are considerable.



307 Hairy broad-nosed weevil (*Barypeithes pellucidus*).

***Curculio nucum* Linnaeus (308–311)**

Nut weevil

A pest of nut plantations, particularly filbert and hazelnut. Generally distributed, and locally common on *Corylus avellana*. Palearctic. Also present in North Africa.

DESCRIPTION

Adult: 6–9 mm long; black and shiny, but covered with light brown or greyish-brown hair-like scales producing a mottled, gingery appearance; body diamond-shaped; rostrum very long, slender and curved. **Egg:** 0.8 × 0.5 mm;

308 Nut weevil (*Curculio nucum*).309 Nut weevil (*Curculio nucum*) – infested hazelnut.310 Nut weevil (*Curculio nucum*) – fully fed larva.

oval and glossy white. **Larva:** up to 10 mm long; body white and plump; head brown and relatively small.

LIFE HISTORY

Adults emerge in May and are particularly active on sunny days. Eggs are laid in June, when host nutlets have reached a diameter of about 10–12 mm (but are still soft-shelled), each inserted through a small hole bored by the female through the nutlet wall. The eggs hatch a week or so later and the larvae, typically one per infested nut, begin feeding on the kernels. Larvae pass through four instars, becoming fully grown in late July or August. Each then escapes from the nut, forcing its way through the by now much enlarged oviposition hole; this aperture also serves as an exit for frass during larval development. Once on the ground, the larvae burrow into the soil to form earthen cells 10 cm or more from the surface. They eventually pupate in the following spring.

DAMAGE

Although the kernels of infested nuts are often completely destroyed, attacks are frequently overlooked during the growing season because the shells develop and ripen more or less normally. At harvest, however, infested nuts are at once recognized by the presence of a circular (c. 2 mm diameter) hole in the side wall. Secondary crop losses may also occur, as weevil damage to nut walls, even when eggs are not then laid, may allow pathogenic fungi to infect the nutlets.

***Furcipes rectirostris* (Linnaeus) (312–313)**

Cherry fruit weevil

In mainland Europe, a pest of cultivated cherry and, occasionally, plum. Wild hosts include *Prunus avium*, *P. padus* and, occasionally, *P. spinosa*. Eurasiatic. Widely distributed in central Europe.

DESCRIPTION

Adult: 3.5–4.5 mm long; reddish brown, with yellowish hairs forming two pale crossbands on the elytra; anterior

311 Nut weevil (*Curculio nucum*) – larval exit hole.

femora each with two spines. **Larva:** up to 6 mm long; body whitish and cylindrical; head reddish brown.

LIFE HISTORY

Adults occur in the spring, from mid-April to mid-June. At the post-flowering stage, eggs are deposited singly in the developing fruitlets of host plants. The eggs hatch in 2–3 weeks and the larvae then feed within the developing stones for about a month before pupating. Young adults emerge from infested fruits from late July onwards and, after feeding on the foliage, eventually hibernate from about mid-September onwards.

DAMAGE

Egg-laying females probe developing fruitlets with their rostrum, forming distinctive necrotic spots on the surface. Later in the season, a fruit from which a young adult has emerged bears a dark, black-rimmed hole on the surface. Infested cherry stones are filled with brown frass and have a small, round exit hole in the wall.

***Magdalis barbicornis* (Latreille)**

Pear weevil

A generally common, but minor, pest of pear and other fruit trees, especially in old, neglected orchards. Also

312 Cherry fruit weevil (*Furcipes rectirostris*) – adult.313 Cherry fruit weevil (*Furcipes rectirostris*) – adult damage.

associated with various other Rosaceae, including *Crataegus monogyna* and *Sorbus*. Present throughout Europe. An introduced pest in the USA.

DESCRIPTION

Adult: 2.5–4.0 mm long; dull black; antennae black, each with a red scape and (in male) a long, broad club; rostrum short and broad; female with decumbent body hairs.

LIFE HISTORY

Adults feed on the underside of pear leaves from late April to June. Eggs are laid in the bark, under which the larvae then develop in isolated chambers aligned parallel to the main axis of the branch or stem. The larvae feed from summer onwards, either eventually pupating in the following spring or, in warmer regions, completing their development and producing adults in late summer or autumn. In the latter case, the adults then hibernate and reappear in the following spring.

DAMAGE

Adult feeding is often concentrated within an area of leaf surface 1–2 cm across, which then becomes peppered with small, brown punctures. The holes sometimes extend through the lamina, but are of no consequence. Parts of wood infested by the larvae sometimes desiccate and die, but damage is of little or no importance.

***Magdalis cerasi* (Linnaeus)**

A minor, sporadic pest of apple and pear. Other hosts include *Crataegus monogyna* and *Sorbus*. Present throughout Europe and particularly common in central and southern areas, including the Mediterranean basin.

DESCRIPTION

Adult: 3–4 mm long; dull black; rostrum relatively long; pronotum broad and swollen laterally; antennae with club normal in both sexes (cf. *Magdalis barbicornis*).

LIFE HISTORY

Adults feed in spring on the foliage of various rosaceous trees, and often occur in neglected orchards. Eggs are laid in small groups from late May onwards, rather later in the season than those of related species. The eggs are laid in small groups, usually in small cracks and crevices in the bark at the base of the buds and young shoots. Larvae feed in galleries which extend upwards for a few centimetres within the wood. Fully fed larvae pupate at the ends of their feeding galleries, and the adult stage is reached in the autumn. The young adults either remain in situ until the following spring or emerge and then hibernate in sheltered situations nearby.

DAMAGE

As for pear weevil (*M. barbicornis*).

***Magdalis ruficornis* (Linnaeus) (314)**

Plum weevil

A minor pest of plum and, occasionally, other fruit trees such as apple, apricot, cherry and peach. Wild hosts include *Crataegus monogyna*, *Prunus spinosa*, *Sorbus aucuparia* and *Spiraea salicifolia*. Widely distributed in Europe, including Mediterranean areas.

DESCRIPTION

Adult: 2.5–3.0 mm long; dull black, with scape of antennae red; rostrum moderately short; pronotum relative narrow, but swollen laterally; antennae with club normal in both sexes (cf. *Magdalis barbicornis*).

LIFE HISTORY

Adult weevils feed on the underside of plum leaves during May and June. The larvae occur in individual cavities hollowed out beneath the bark of host trees, but they do not form extensive galleries or tunnels. Larval development is similar to that of pear weevil (*M. barbicornis*).

DAMAGE

Larvae feeding in shoots may cause nearby buds to desiccate and drop off, but this is of little or no importance as infestations are largely confined to older wood. Adult feeding is also unimportant.

***Mecinus pyraster* (Herbst)**

Lesser apple foliage weevil

This small (3–4 mm long), cylindrical, shiny black weevil (with a slight grey pubescence) is often numerous on apple trees in June. Although feeding on foliage, forming small holes in the laminae, it is not harmful. The weevils have also been recorded on pear, cherry and plum. The larvae feed in the inflorescences of *Plantago*.

314 Plum weevil (*Magdalis ruficornis*).***Otiorhynchus clavipes* (Bonsdorff) (315)**

Red-legged weevil

A polyphagous pest of plum, raspberry and, occasionally, apple, currant, gooseberry, strawberry and grapevine. Widely distributed in western Europe, particularly on light soils.

DESCRIPTION

Adult: 9–13 mm long; blackish, with elytra elongate-oval and distinctly pointed posteriorly; legs long and reddish; sculpturing on thorax and elytra shallow; wingless. **Egg:** 0.6 × 0.5 mm across; more or less spherical; whitish when laid, but soon becoming blackish. **Larva:** up to 12 mm long; body creamish white, plump, wrinkled and strongly C-shaped; head brown. **Pupa:** 8–11 mm long; white, with antennae, legs and other appendages free; eyes purplish.

LIFE HISTORY

Adults appear in late April and May or from mid-June to August, depending on the timing of pupation. They are active at night, feeding on leaves and other aerial parts of various host plants, but drop to the ground immediately if disturbed. By day, the weevils hide in grass tussocks, under stones and in other shelter. Reproduction in the species is either sexual or parthenogenetic. Eggs are laid in the soil, scattered at random near the surface beneath host plants, each female depositing up to 300. The eggs hatch in about 3 weeks. Larvae then feed on plant roots. They overwinter either as young individuals (and pupate in the following summer) or when fully fed (and then pupate earlier, in the late spring); overwintering in the pupal stage is also reported.

315 Red-legged weevil (*Otiorhynchus clavipes*).

DAMAGE

Adults bite holes into leaves and destroy buds, blossoms, developing fruitlets and young shoots. The upper foliage on raspberry canes is often attacked; later in the season, the weevils weaken and check the growth of young canes by gnawing at the bases. Larval damage to the roots of raspberry and strawberry plants is sometimes serious, particularly in spring, attacked plants wilting and sometimes dying; roots of currant and gooseberry bushes may also be attacked, but effects on bushes are usually slight unless the plants are already under stress from other factors.

***Otiorhynchus cribricollis* Gyllenhal (316)**

Olive weevil

A minor pest of olive. Adults also feed on various other plants, including apple, grapevine, citrus and fig. Widely distributed in southern Europe, including France, Italy and Spain; also present in North Africa and an accidentally introduced (and sometimes an important) pest in Australia, New Zealand and the USA.

DESCRIPTION

Adult: 6.5–8.5 mm long; brown and shiny, with the thorax and elytra deeply punctured; antennae and legs reddish.

LIFE HISTORY

Adults of this mainly parthenogenetic, nocturnal species occur from the end of May or early June onwards. Eggs are eventually laid in the soil. They hatch about 2 weeks later. Larvae then feed on the roots of various plants, particularly *Artemisia gallica*, becoming fully grown by the following spring. They then pupate, each in an earthen cell; adults appear about a month later.

DAMAGE

Adults form U-shaped notches in the margin of leaves, but effects on plant growth are usually insignificant.

316 Olive weevil (*Otiorhynchus cribricollis*) – adult damage to leaf.***Otiorhynchus meridionalis* Gyllenhal**

This minor pest occurs in the Mediterranean basin, where the adults feed on the leaves and flowers of various members of the Oleaceae, including cultivated olive. At least in Spain, damage is also reported on citrus (lemon). Adults are 7–10 mm long and brownish black, with the abdomen elongate-oval and somewhat pointed posteriorly. Larvae feed on the roots of various plants.

***Otiorhynchus ovatus* (Linnaeus) (317)**

Strawberry weevil

A polyphagous pest of various greenhouse and forestry plants; also, occasionally, a pest of strawberry and, less significantly, loganberry and raspberry. Palearctic. Widely distributed and often common in Europe. Also an introduced pest in North America, where it is of particular importance on strawberry.

DESCRIPTION

Adult: 4.5–5.5 mm long; somewhat shiny, dark brown to black with a short, scattered, pale yellow pubescence; disc of thorax furrowed; transverse sculpturing of elytral interstices only slight; wingless. **Larva:** up to 6 mm long; body creamish white to brownish white; head brown.

LIFE HISTORY

This species is mainly parthenogenetic, with adult females appearing in late April and May. Eggs are laid about 10 days after spring feeding commences. They are usually deposited in the soil, but sometimes also on leaf petioles close to the ground. Productivity is relatively low, a weevil usually laying no more than 50 eggs. The eggs hatch in about 3 weeks. Larvae then feed on plant roots, pupating in the autumn within an earthen cell a few centimetres below the surface. The adult stage is reached about 3 weeks later, but individuals remain inside their cells until the spring. Old adults still alive in

317 Strawberry weevil (*Otiorhynchus ovatus*).