

## KNOW YOUR CHAFERS

*Maria Fremlin*

My interest in chafers, Coleoptera: Sacarabaeidae, started when I took an allotment at the Drury Road site, Colchester, TL985250, in 1999. There the jewel-like rose chafers are a common site basking on flowers; in fact, they are just taken for granted. Curiously I had never seen these beetles anywhere else, but was very familiar with their larvae, which are very often found in compost heaps in Ireton Road, where I've lived for much longer [1].

### Rose chafer survey

So it came as a great surprise to realize that rose chafers are very rare in this part of the country [2]. To find out more about the Colchester population, with the support of Jerry Bowdrey, the curator of the Colchester Natural History Museum, and Peter Harvey of the Essex Field Club, we launched a Rose Chafer Survey in 2007. And, at the time of writing, we now know that Colchester is the only place in Essex where there are recent records for *Cetonia aurata* (L.) [3]. There are none in Suffolk or Norfolk; however they seem to like the south of the country better. Now we will carry on with the survey in order to know a bit more about its range within Colchester. Records to date are from the centre and the south west part of town, but there are none in Stanway [4].

### What do they look like?

Rose chafers *C. aurata* are diurnal, feed on pollen and nectar, and in my allotment can easily be found feeding, or just resting, on flowers, and later on in the year, they are sometimes found on fruit. Occasionally they do chafe the rose petals, hence their name, but otherwise seem to do no damage to flowers [Figure 1].



**Figure 1 - Diurnal rose chafers *C. aurata*, 15 - 21 mm, on a chafed rose.**

**Photo: Maria Fremlin**

They fly around very fast, with their wing cases down, and look a bit like bumble bees. Apparently their larvae started as saproxylic, feeding on rotten wood, but remarkably have turned to a more generalist diet, and are now saprophagous, feeding on rotting organic matter [5]. So they can be found in a variety of places: rotting wood, woodchips, and compost, leaf-mould and manure piles. This interesting shift in diet has also been observed in the European rhinoceros beetle *Oryctes nasicornis*, Scarabaeidae family as well, but it doesn't occur in the UK. Both species can share similar habitats with the stag beetles *Lucanus cervus*, a close relation, Lucanidae family, and all seem to do well in urban areas [6]. However this has its downside, mostly habitat disturbance and encroachment.



**Figure 2 – Other chafers commonly found in south Colchester are, from the left, crepuscular hairy summer chafer *Amphimalon solstitialis*, 15 – 20 mm, and smaller *Serica brunnea*, 8 - 10 mm, also crepuscular. These chafers feed on fresh roots during the larval stage and the adults on leaves; the diurnal rose chafer *C. aurata* occupies a different niche altogether. They all have fan shaped antennal clubs.**

### Chafer grubs

To some gardeners chafer grubs are bad, and must go! This because there are other chafers which, unlike rose chafers, spend their larval stage feeding on live plant roots, hence have a terrible reputation; for example, the large cockchafer *Melolontha melolontha* feeds on fresh roots in the larval stage and is considered an agricultural pest. Interestingly I have never seen this species in our area, instead I've found only two other root feeding species [Figure 2].

How can one tell the difference between compost and root feeding chafer grubs?

Rose chafer larvae are found in rotting organic matter, often in clutches, have a hairy wrinkly firm body, very short legs, small head and large bum [Figures 3 & 4]. They are the equivalent of earth worms and help break things down so they are very beneficial. To complicate things a bit, rose chafer larvae have even been found in flower pots [5], but more of that later.



**Figure 3 – From left, rose chafer *C. aurata* and summer chafer *A. solstitialis* last instar larvae on millimetric paper, smaller division 1 mm.**

Just put the larvae on a flat surface and soon you will see the rose chafers doing a hilarious back crawl, and the others quickly sneaking away on their long legs, dragging their ‘bums’ behind. By the way, rose chafer larvae are often confused with the stag beetles’ larvae; however the latter have a very big head and will stay sedately in their ‘C’ shaped position. Visit my Gardener’s Larva Guide for more details [7].

If you ever find clutches of white grubs in your compost, surely just when you are on the point of using it, then put them on another pile. Sometimes I’ve got so many that now, when I’m using the compost, I save them in a container that I carry along, and in the end place them back on a younger compost pile. This because they will need to feed a bit longer before they get ready to pupate, which brings me to their life history.

### **Rose chafer life cycle takes two years**

Rose chafers are much easier to rear than stag beetles, and over the years I’ve been keeping and observing them [8]. Moreover in May 2007

I’ve been able to successfully get a very obliging pair to breed, at the first attempt, thus filling in some gaps in their life history [Figure 5].



**Figure 4 – Rose chafer *C. aurata* larvae found in leaf mould, TL986244.**

**Photo: Maria Fremlin**

**Figure 5: Rose chafer life cycle photos, some on millimetric paper**



**5.1: eggs**



**5.2: a freshly hatched larva below a one year old third instar larva**



**5.3: cocoon made out of compost particles and soil glued together**



**5.4: opened cocoon showing the larva in the prepupation stage**



**5.5: opened cocoon showing an early stage pupa**



**5.6: freshly emerged imago**

**Breeding season:** possibly soon after emergence in the spring. My earliest sighting of a mating pair was found mid May, 14/05/2004, on rhubarb flowers.

**Eggs:** at least 7, possibly much more, and also possibly several clutches, laid in decomposing organic matter [9]. Eggs are approximately 2 mm diameter, translucent white, and turn pearly white with maturation. Indoors they took just over 2 weeks to emerge.

**Larval development:** the tiny larvae grow very quickly; indoors they had their first moult in 17 days. The second moult takes longer, 4 to 5 weeks. Then they will overwinter in their last and third instar.

**Pupa:** the third instar larvae by mid July will all have stopped feeding and started making a cocoon just where they have been feeding about the size of a big acorn. Pupation occurs inside the cocoon and might take from 4 to 6 weeks.

**Imago:** by early to mid September it will be fully formed, and might overwinter in the soil, or else be tempted to come out in warm autumn days. Main emergence is from the end of March, earliest sighting on 24/03/2003. From then on they might be spotted basking on flowers during sunny days throughout the summer.

### Habitat requirements

Rose chafers seem to be quick to find new breeding sites. For instance, I have found them in my BB4B bucket [10]; this bucket was buried on May 2005, and 18 months later had one third instar larva, eleven empty cocoons, and two *C. aurata* imagos [11]. Also, they seem to be on the increase in Germany possibly due not only to warmer summers but also to their new composting laws, to produce compost from all organic substances in gardens and houses. There they have a lot of factories producing compost from trees, etc. This material is then used as general purpose compost in flower pots and gardens, which also helps save the precious peat bogs [12].

The same is happening in the UK where some peat-free composts seem to have a high wood content, so tempting to the rose chafer. Therefore I would like to hear from anybody who has found grubs in flower pots; please take photos or freeze one for me. Meanwhile put the rest in your compost heap.

### Conclusion

It certainly seems that the rose chafer Colchester population is just about the only flourishing population in Essex, and trying to understand the reasons for this would be most interesting; particularly the overlap within the also flourishing stag beetle population, which has a much larger range. This overlap might just be a coincidence,

however. For instance, it is known that in East Sussex the rose chafer is common within Lewes town, whereas the stag beetle has never been recorded from Lewes but is regularly seen at Ringmer, which is less than 3 miles away [13]. Why?

In the meantime let's recycle as much organic matter as possible locally thus increasing the number of tempting nesting sites in the area, and possibly its range, which at present seems to be very localised. As Simon Barnes keeps saying "conservation works"; we mustn't run out of these jewels, rather, have more of them around.

## Acknowledgments

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