integrated management of forest pests addressing climate trends

Pest profile – Cockchafers

Scientific name: *Melolontha melolontha* (Linnaeus, 1758)
Taxonomic position: Insecta; *Coleoptera; Scarabaeidae*
Common name: Common cockchafer; May-bug, May beetle.

Hosts: Deciduous woodland; parkland; as well as wooded urban areas, farmland and gardens. The oak trees Pedunculate oak (*Quercus robur)* and Sessile oak (*Quercus petraea)* are a favourite feed. The cockchafer has a three year life cycle. After mating the female digs down about 20cm into the soil to lay between 10 and 20 eggs. The eggs hatch after 21 days and the larvae remain in the soil for a further two years feeding on plant roots.

Threats: The Cockchafer is the largest species of chafer beetle in the UK and adult Cockchafers swarm in May and early June feeding on the leaves and flowers. Although the adults eat the leaves of trees and shrubs, they rarely cause any significant damage in the UK. The larvae, sometimes called rookworms, if present in large numbers, can occasionally be pests of commercial vegetable crops, pastures, and grassed amenity areas such as lawns and grass-sports facilities (e.g. golf, cricket and bowling).

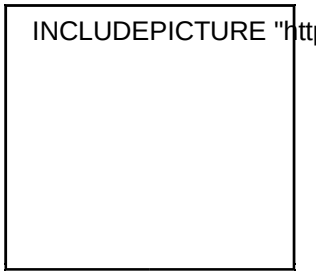
Distribution and spread: Is widely distributed in the UK but more frequently seen in the south and throughout Ireland. In places where they're found, cockchafers are usually in large numbers.

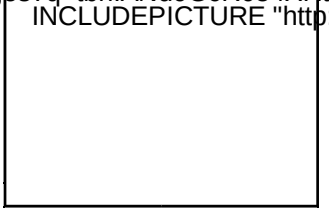
Climate change: Climate conditions can act as negative abiotic factors: rain and cold periods during the flight cause shorter life span of the beetle and a prolonged maturation of the eggs in the body. The young first year larvae are affected by extreme high temperatures and drought. The older larvae are able to avoid this by moving to deeper soil. Winter frost is not a serious factor because the larvae can dig deep in the soil.

Control: Damage by grubs can be reduced by the use of chemical and/or available biological control methods (Entomopathogenic nematodes EPNs and a bacterial isolate - Mm2 are two options available). Thorough cultivation and good weed control will generally minimise plant losses. Infested plants may benefit from adequate watering and fertilizing to stimulate good growth of the crops. Summer ploughing of the soil, especially by rotating machines, will kill many larvae or release for birds.

Forest Research The Research agency of the Forestry Commission
NUI MAYNOOTH
Swansea University Prifysgol Abertawe
SOUTHERN & EASTERN Regional Assembly Promoting Our Region
IRELAND WALES 2007 – 2013
Ireland's EU Structural Funds Programmes 2007 - 2013 Co-funded by the Irish Government and the European Union
EUROPEAN REGIONAL DEVELOPMENT FUND

Monitoring:
Can be done by shaking small feeding trees or certain branches of taller trees in the early morning when the beetles are cold. Estimating the number of fallen beetles gives an idea of the pest incidence. Also the beetles are attracted to lamp lights. Counting or estimating the number of crashed beetles can give also a rough idea of numbers.





Adult beetles live for up to 8 weeks. The larvae are chunky, white, curved, soil-dwelling grubs that feed on roots of both herbaceous and woody plants. The grub measures 10-20 mm in the autumn following after eclosion from egg and 30-35 mm by autumn of the following year. Still as a grub it reaches its maximum size of 40-46 mm in the spring of its third year.

Larvae pupate in the ground, usually in July. After five to six weeks the adults emerge only to overwinter in the soil until the following spring. The developmental cycle, then, lasts 36 months spread over 4 years.

The "major flights" take place every 3 years -"cockchafer years " – but the year differs from one region to another.

Year 1	Year 2	Year 3	Year 4
egg (May) first year larva	2nd year larva	3rd year larva; pupates July	hibernation until emergence as adult in May)

The IMPACT project, with partners Forest Research in Wales, Swansea University and the National University of Ireland, Maynooth is looking at improved pest control measures. Top of the agenda for the *Integrated Management of forest Pests Addressing Climate Trends (IMPACT)* team is assessing how changing climate will influence the damage caused by pests and pathogens. The project is part funded by the European Regional Development Fund through the Ireland – Wales Programme (INTERREG IVA) and Natural Resources Wales. For more information log on to:

www.impactproject.eu

Forest Research
The Research agency of the Forestry Commission
NUI MAYNOOTH
Swansea University
Prifysgol Abertawe
SOUTHERN & EASTERN
Regional Assembly
IRELAND WALES
2007 – 2013
EUROPEAN REGIONAL DEVELOPMENT FUND