

Pest profile – Oak Jewel Beetle

Scientific name: *Agrilus (Anambus) biguttatus* (Fabricius, 1777)
Taxonomic position: Insecta; Coleoptera; Buprestidae
Common name: Oak jewel beetle



Hosts: It is found mainly on [oak](#) but [chestnut](#) and [beech](#) are also susceptible. Its presence can be identified either from 'D-shaped' exit holes created by the emerging adults or by larval feeding galleries within the inner bark. This has raised concerns that this native beetle is contributing to the mortality of the trees.



Threats: The beetles have become a significant component in oak dieback. The insect may kill trees very quickly, especially those weakened by water stress. Acute Oak Decline (AOD) involves a complex of interacting biotic and abiotic factors, which results in the rapid loss of health of oak trees, often killing them within just a few years. AOD is being increasingly reported in Britain on native oak species, *Quercus petraea* and *Q. robur*.

It can be identified by the exudation of sticky dark fluid from lesions on the trunk, beneath which the underlying bark tissue becomes necrotic (localised death) and consistently yields a suite of apparently pathogenic bacteria. With dieback, development of epicormic branch knots occurs, and thin crown and tree mortality is then typical. This is due to the destruction of the cambium. Callus growth and bark cracking may be observed as the tree attempts to compartmentalize the injury.

Distribution and spread: An uncommon beetle in Britain although it is thought to be increasing in numbers here. It is found mainly in the south Midlands and south eastern England. It can be found in Europe, Middle East, Siberia and northern Africa. It has not been reported in North America.

Climate change: Until quite recently *A. biguttatus* was considered to be a rare endemic species in the UK, developing on recently dead or dying hosts, but distributional records over the last 25 years suggest an increase in both its abundance and geographical distribution in southern England, and a frequent association with oak decline sites. The species has a flexible life cycle responsive to local conditions, of which temperature is likely to be the dominant factor. The southerly distribution of the species, and the female preference for ovipositing (deposit or the laying of eggs) on the warmer south-facing side of host trees, suggest that temperature is critical in determining the range, abundance and number of generations in a year (voltinism) of the beetle, and a changing climate is likely to be influential in the role it plays in AOD.

Life cycle: This beetle may have one generation a year in warm climates, but a two-year cycle is more common. Like other metallic wood-boring beetles they are strong fliers which are able to fly several kilometers in search of a suitable host. Adults engage in some maturation feeding in addition to laying eggs. The south side of large oaks (diameter at breast height of 30-40 cm (11-15 inches)) is preferred for oviposition. Larvae feed in the cambium creating frass-filled 'zigzag' galleries. Pupation occurs in the bark. The insect overwinters in both the larval and pupal stages. In mid-spring, adults emerge leaving D-shaped exit holes.

Click on the hyper-link below for images of the life cycle of the Oak Jewel Beetle:

http://impactproject.eu/uploads/aod_poster_agrilus_biguttatus.pdf

Control: Control measures could be costly and ineffective given its elusive nature. Feeding larvae are generally well protected while tunnelling inside the host. A thorough understanding of its biology and the conditions that favour attack by this pest is necessary before successful detection and control efforts are available.

Monitoring: No method for monitoring populations has been proposed, mainly because of difficulties in the detection of infested trees and the lack of good attractants and trapping methods.





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:

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