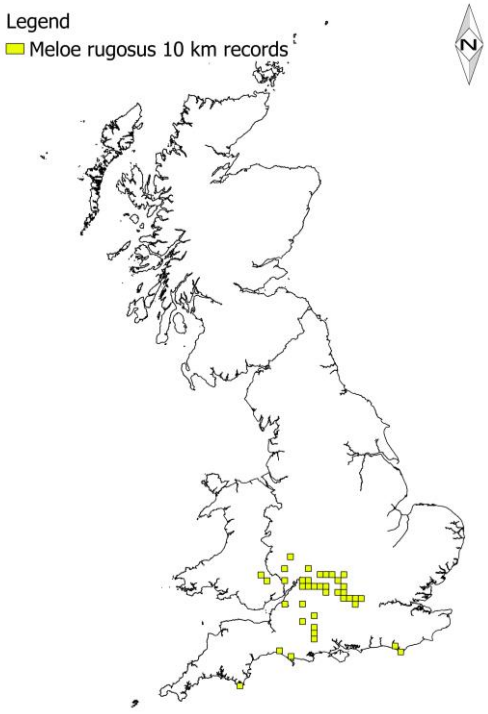
BACK FROM THE BRINK

SPECIES INFORMATION GUIDE

Rugged Oil Beetle

Meloe rugosus



Rugged Oil Beetle distribution across Britain (2006-2021)

The data used to create this map has been provided from Oil Beetle Recording Scheme [24/02/2021] Records verified via iRecord.

A dull black beetle with a roughened body surface and straight antennae. Adults grow up to 19mm long and have a rectangular-shaped thorax which is wider than long, with a distinct narrow groove down the centre. The very rare Mediterranean Oil Beetle *Meloe mediterraneus* looks similar but on average is larger and lacks the groove down the centre of the thorax.

Rugged Oil Beetle triungulins (the larvae) are very small, measuring less than 0.5mm in length, and are yellowish in colour with an obvious dark head. Mediterranean Oil Beetle triungulins are of similar size but entirely orange.

Lifecycle

Adult Rugged Oil Beetles are active between late September and early April and are largely nocturnal, becoming active shortly after dusk. Like other oil beetles, they are nest parasites of ground-nesting solitary bees.

Once mated, female Rugged Oil Beetles dig burrows into the ground, into which they lay hundreds of eggs. These eggs hatch between mid-April and July into long-legged larvae known as triungulins. Upon hatching, the triungulins climb up nearby flower stems and lay in wait within a flower. When an unsuspecting solitary bee visits the flower, the triungulin attaches itself to hairs on the bee's back using specialised hooks on its feet and hitches a ride back to the bee's nest. Once inside the nest, the triungulin changes into a more 'maggot-like' larva and feeds on the store of pollen and nectar that the bee intended to provide for its own offspring. The beetle larva develops in the bee burrow until it emerges as an adult Rugged Oil Beetle the following autumn or winter, ready to mate and start the whole cycle again.

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Habitat

The Rugged Oil Beetle is found in flower-rich calcareous grasslands on chalk and limestone, including chalk downs and vegetated coastal cliffs. It is also readily found in gardens in calcareous districts.

Distribution

This species has a scattered distribution in southern England and south-east Wales where it is associated with calcareous grasslands on chalk and limestone. It has never been widespread, owing to its strong association with calcareous grasslands. Many of the recent records of this species are confined to southern and central England, particularly in the Cotswolds and Mendip Hills.

GB status and rarity

Nationally Scarce

Protection under the law

This beetle is included as a species "of principal importance for the purpose of conserving biodiversity" under Section 41 (England) of the Natural Environment and Rural Communities Act 2006.

Survey method

Adults are mainly nocturnal, becoming active shortly after dusk. As such, they are best found by careful searching using torchlight. Avoid cold, frosty nights. Mild, overcast evenings are best.

Reasons for decline

One of the main reasons for decline is the loss of calcareous grassland habitat due to agricultural 'improvement', particularly the use of fertilisers, herbicides and other pesticides, re-seeding or ploughing for arable crops. Further declines have likely been caused by insufficient, inappropriate or an absence of land management which has resulted in scrub development and the subsequent loss of bare ground habitat and flower-rich areas for host solitary bee nesting and foraging.

Habitat management for Rugged Oil Beetles

The long-term maintenance of wildflower-rich, calcareous grasslands is important as this will benefit solitary bees as well as other pollinators. This is best achieved through grazing using sheep or cattle, though care needs to be taken with stocking densities to avoid overgrazing and physical damage to solitary bee burrows. Some grass tussocks within the sward are a useful feature as these provide sheltering locations for Rugged Oil Beetle adults during the day.

Autumn and winter grazing is important to ensure an open grass sward come spring. Consider removing livestock during spring and summer, or considerably reducing numbers, thus ensuring the ground remains undisturbed during the period of host solitary bee nesting. Summer grazing, using low stocking densities, may be required in some situations to control Tor-grass *Brachypodium pinnatum* which can dominate grasslands and dramatically decrease plant diversity. Avoid summer sheep grazing as sheep will selectively graze off flowers. Rabbit grazing may provide sufficient management in some situations.

Cutting will be required should grazing prove unfeasible. Leave some areas uncut each year, cutting on a rotation every several years. Cutting should be done as late in the summer as possible, before adult Rugged Oil Beetles emerge in autumn. It is important to remove cuttings to prevent the accumulation of nutrients in the soil, which can reduce plant diversity.

Some disturbance is important to maintain areas of bare ground for solitary bee nesting. This may be maintained through poaching by grazing animals, or human traffic through the action of trampling and footpath erosion. Should a decline in bare ground habitat become evident, consider the creation of scrapes in sheltered, sunny spots. Practices such as surfacing paths should be avoided as this will reduce the amount of bare ground for solitary bee nesting and could prove detrimental to Rugged Oil Beetle populations.