

Back from the Brink – Species summary

Rugged Oil Beetle

BftB project: IPO4 Limestone’s Living Legacies

Project lead organisation: Butterfly Conservation

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Partner organisation for species: Buglife

Species name – common & scientific	Rugged Oil Beetle <i>Meloe rugosus</i>
Photograph	 <p style="text-align: center;">© Graham Lyons / Back from the Brink</p>
Taxon group	Coleoptera, Meloidae
Conservation status	Red Data Book: Nationally Scarce A species “of principal importance for the purpose of conserving biodiversity” under Section 41 (England) of the Natural Environment and Rural Communities Act 2006.
UK distribution	Probably always uncommon, it 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 recent records are confined to southern and central England, particularly in the Cotswolds and Mendip Hills.
Habitat associations	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.

BftB work carried out:	
Survey & Monitoring	<p>BftB project work has focused on improving our knowledge of Rugged Oil Beetle distribution in the Cotswolds, understanding its distribution within individual sites, trying to find out the likely solitary bee hosts and increasing our knowledge of the beetle's habitat requirements.</p> <p>Between 2017 and 2021 a total of 28 sites were surveyed for Rugged Oil Beetles. Prior to surveys starting, 8 sites were known within the Cotswolds AONB boundary. This has now increased to 20 with an additional 3 sites having been found outside the AONB.</p> <p>Surveys involved visiting sites during autumn and winter after dark and on nights above 5 degrees. Surveys were carried out using torches and any beetles found were counted and 10 figure grid references taken to enable distribution maps to be created for each site.</p> <p>In addition, in 2021, surveys for triungulins, the Rugged Oil Beetle larvae were also carried out by volunteers following a training workshop by Buglife.</p>
Sites habitat management works	<ul style="list-style-type: none"> • Scrub and ruderal clearance work carried out by volunteer groups at Edge Common, Cranham Common, Juniper Hill, Painswick Beacon and Sheepscombe Common – all known Rugged Oil Beetle sites. • Electric fencing also installed by volunteers at Juniper Hill to enable the reintroduction of sheep grazing. • Pond fenced in the Myers Field area of Rough Bank nature reserve to enable continued grazing in the Myers Fields and Rough Bank itself – another known Rugged Oil Beetle site. • Cattle handling system installed to enable Painswick Beacon Conservation Group to continue cattle grazing at Painswick Beacon. • Scrape creation for Juniper at Rodborough Common likely to also provide new nesting opportunities for solitary bees (which Rugged Oil Beetles require) and for adult Rugged Oil Beetles. • The installation of a new water trough at Swift's Hill to allow for an increased number of livestock will help benefit Rugged Oil Beetle through more extensive grazing.
Technical advice provision	<p>Site advice visits with landowners/land managers to Painswick Beacon and Rough Bank to discuss grazing management (including for Rugged Oil Beetle) and to Rodborough Common to discuss scrape creation for Juniper and Rugged Oil Beetle.</p> <p>A new Rugged Oil Beetle factsheet was also produced with Buglife.</p>
Links made with other taxa / conservation work?	<p>Scrub and ruderal clearance for Rugged Oil Beetle also aimed to benefit a range of other species:</p> <p>Edge Common – Duke of Burgundy Cranham Common – Lesser Butterfly Orchid and Adder Juniper Hill – Duke of Burgundy Painswick Beacon – Large Blue Sheepscombe Common – Large Blue</p> <p>Scrape creation at Rodborough Common initially identified for Juniper but was also aimed at providing new nesting opportunities for solitary bees (which Rugged Oil Beetles require) and for adult Rugged Oil Beetles.</p>

	<p>Rugged Oil Beetles are nest parasites of solitary bees but exact host species remain unknown. Survey work carried out by Buglife at five known Rugged Oil Beetle sites aimed to help whittle down the possible host species. This work identified 9 possible bee hosts although further research is still required (see 'Other results documented' below).</p> <p>Surveys added further anecdotal evidence to the need for a mosaic habitat with longer swards/tussocks as well as areas of bare earth.</p>
<p>Wider engagement & advocacy activities?</p>	<ul style="list-style-type: none"> • Volunteer training workshops on how to identify and survey for Rugged Oil Beetles were run with Buglife in 2017, 2018, 2019 and 2020 (via Zoom followed up with field visits). Attended by a total of 102 people and resulted in a number of people getting involved with surveys. • A further workshop in 2021 also run by Buglife focused on identifying and surveying for the triungulins – Rugged Oil Beetle larvae. This was attended by 5 people and was found to be another very useful way of surveying for Rugged Oil Beetles as it extends the survey season into the spring/summer and also allowed us to identify sites where previously adults hadn't been found. • A talk on Rugged Oil Beetles was given as part of the Field Studies Council's 'Virtual Meet Ups' programme in 2020. This was attended by over 90 people and is still available to watch on FSC's YouTube channel. • In addition, Buglife produced a recorded training workshop on Oil Beetles in order for people to learn how to identify and survey for all five species of UK oil beetle. This is on their website and YouTube channel. • An article on our work for both Rugged Oil Beetle and Rock-rose Pot Beetle was written for the Proceedings of the Cotteswold Naturalists Field Club. Other articles were also written covering our work for species including the Rugged Oil Beetle.
<p>BftB results obtained:</p>	
<p>Recorded Distribution (in BftB focal areas)</p>	<p>Prior to the BftB surveys, the beetle was known from 8 sites in the Cotswolds (Figure 1). BftB surveys have since increased the number of Cotswold sites to 20 (Figure 2). Another 3 sites were identified outside of the Cotswold AONB by volunteers. (A further 3 sites have also been identified by members of the public but not fully surveyed.)</p> <p>The majority of these new sites were discovered via adult beetle surveys, with one identified from triungulin surveys in spring/summer 2021. No adults had been found at this site in winter 2020.</p> <p>Triungulin surveys at Rodborough Common also confirmed the continued presence of Rugged Oil Beetles as no adult beetles had been found in winter 2020.</p>
<p>Recorded Abundance of species populations</p>	<p>The highest abundance of Rugged Oil Beetles were found at Painswick Beacon and a privately owned site near Miserden. A total of 143 and 140 beetles were counted on surveys at these sites respectively in 2020.</p> <p>Other notable results included at top count of 90 at Juniper Hill in 2018 and 3 found at Bull's Cross – a site currently undergoing restoration grazing and scrub removal.</p>

<p>Other results documented?</p>	<p>Olds, L. 2020. 'An investigation into the potential hosts of Rugged Oil Beetle (<i>Meloe rugosus</i>) in Gloucestershire.' Buglife report for Limestone's Living Legacies.</p> <p><i>"A total of 34 solitary bee species were recorded during the surveys across five study sites in the Cotswolds AONB. Of these, 9 species are potential host species of Rugged oil beetle in the Cotswolds AONB. Some caution needs to be taken when interpreting the results of this study, however, since the presence of these species on known Rugged oil beetle sites and/or within known areas of Rugged oil beetle adult activity does not categorically prove that these bee species are hosts. Determining this is difficult but it is hoped that the results of this study will at least provide a starting point for further investigation and narrow down the number of potential host bee species. Further survey work is evidently needed to further explore the potential hosts of Rugged oil beetle in the Cotswolds AONB and elsewhere in England and Wales"</i></p>
<p>Species Recovery Curve progress made</p>	<p>Species recovery curve score moved from 2 to 6: Recovery solutions such as scrapes and targeted grazing trialled.</p>
<p>Recommendations for future work:-</p>	<p>Further survey work required to further explore the potential host bee species of Rugged Oil Beetle.</p> <p>Research (Master's project?) into the association between adult Rugged Oil Beetles and vegetation height to add weight to the anecdotal evidence that the beetles require tussocks/patches of longer vegetation as well as shorter turf and bare soil.</p> <p>Keep an eye on grazing levels at sites such as Rough Bank, Cranham Common and Painswick Beacon to make sure a mosaic of shorter turf, bare soil and tussocks are retained.</p> <p>Continued survey work at selected sites (tbc) to monitor the populations in response to grazing.</p> <p>Research (Master's project?) into the link between adult population sizes and the availability of early spring flowers. Anecdotal evidence that sites with few early spring flowers have the smaller populations, whereas sites with larger populations have good coverage of early spring flowers and in turn lots of triungulins found. Is this a limiting factor?</p>

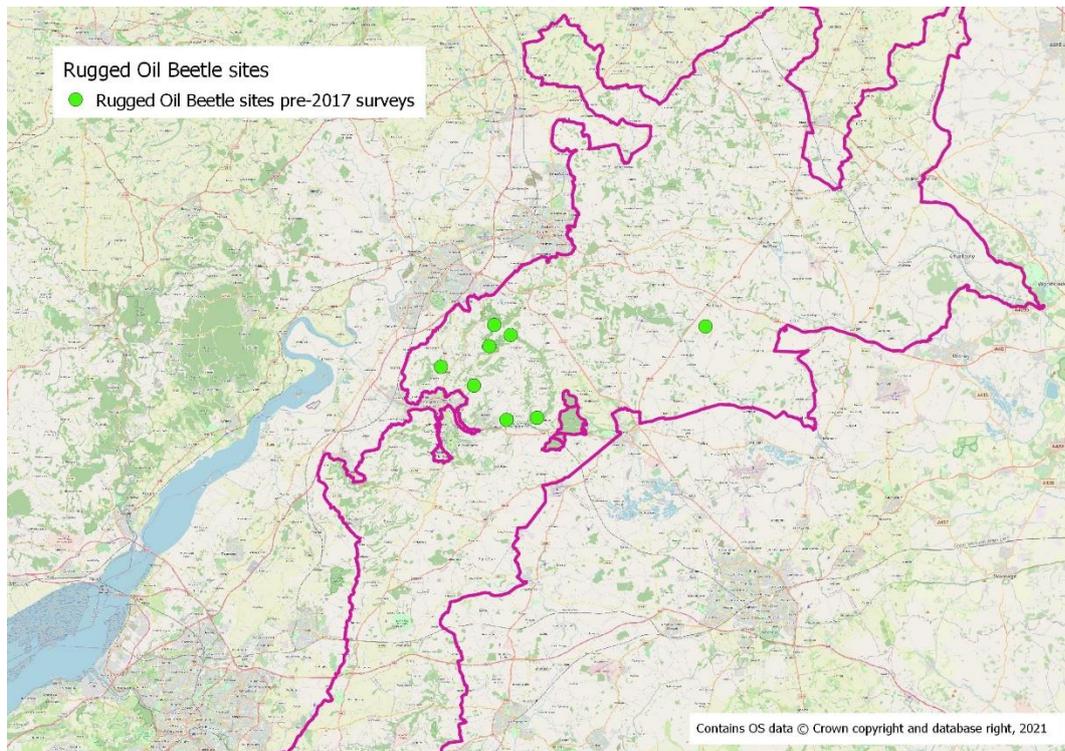


Figure 1. There were eight known Rugged Oil Beetle sites within the Cotswolds, prior to the 2017 BftB surveys starting, mostly in the Stroud Valleys area.

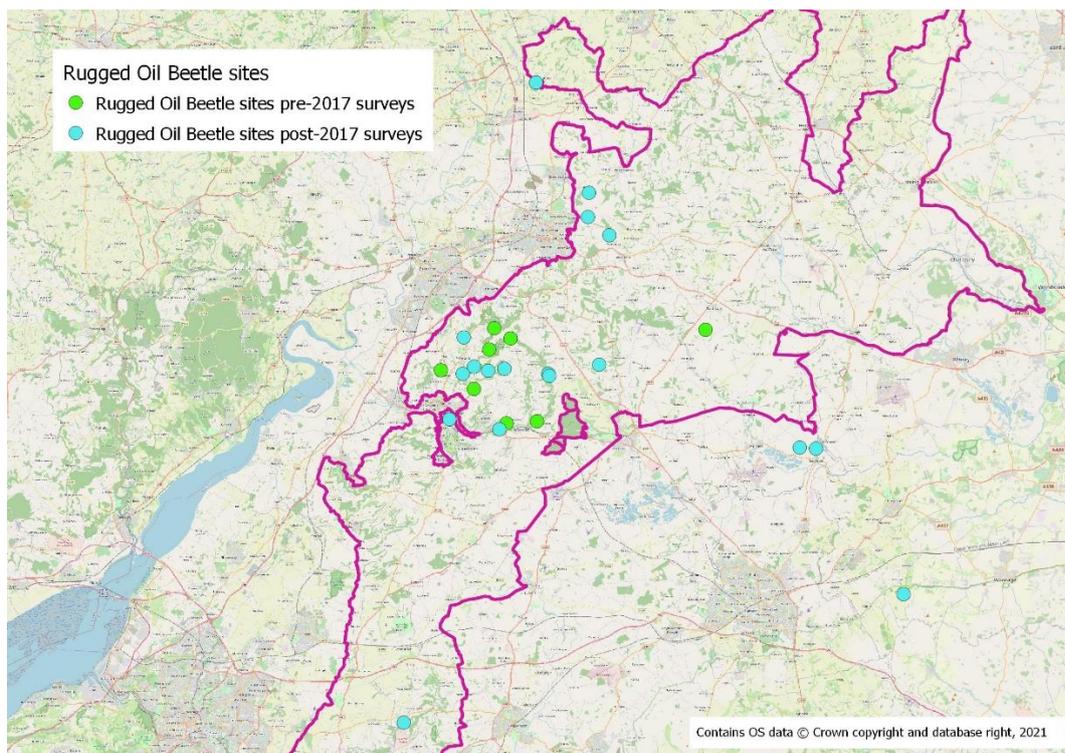


Figure 2. BftB surveys discovered the beetle at a further 12 sites in the Cotswolds and three sites outside the Cotswolds AONB boundary. (A further 3 sites were also identified by members of the public but not fully surveyed.)