

**A visual guide for the identification of British
Coelioxys Bees**



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Introduction

The Hymenoptera is an order of insects that includes bees, wasps, ants, ichneumons, sawflies, gall wasps and their relatives. The bees (family Apidae) can be recognised as such by the presence of feather-like hairs on their bodies, particularly near the wing bases. The genus *Coelioxys* Latreille belongs to the bee subfamily Megachilinae. There are six species of *Coelioxys* present in mainland Britain. Two other species are found in Guernsey but not mentioned in this pictorial key (*C. afra* Lepeletier and *C. brevis* Eversmann).

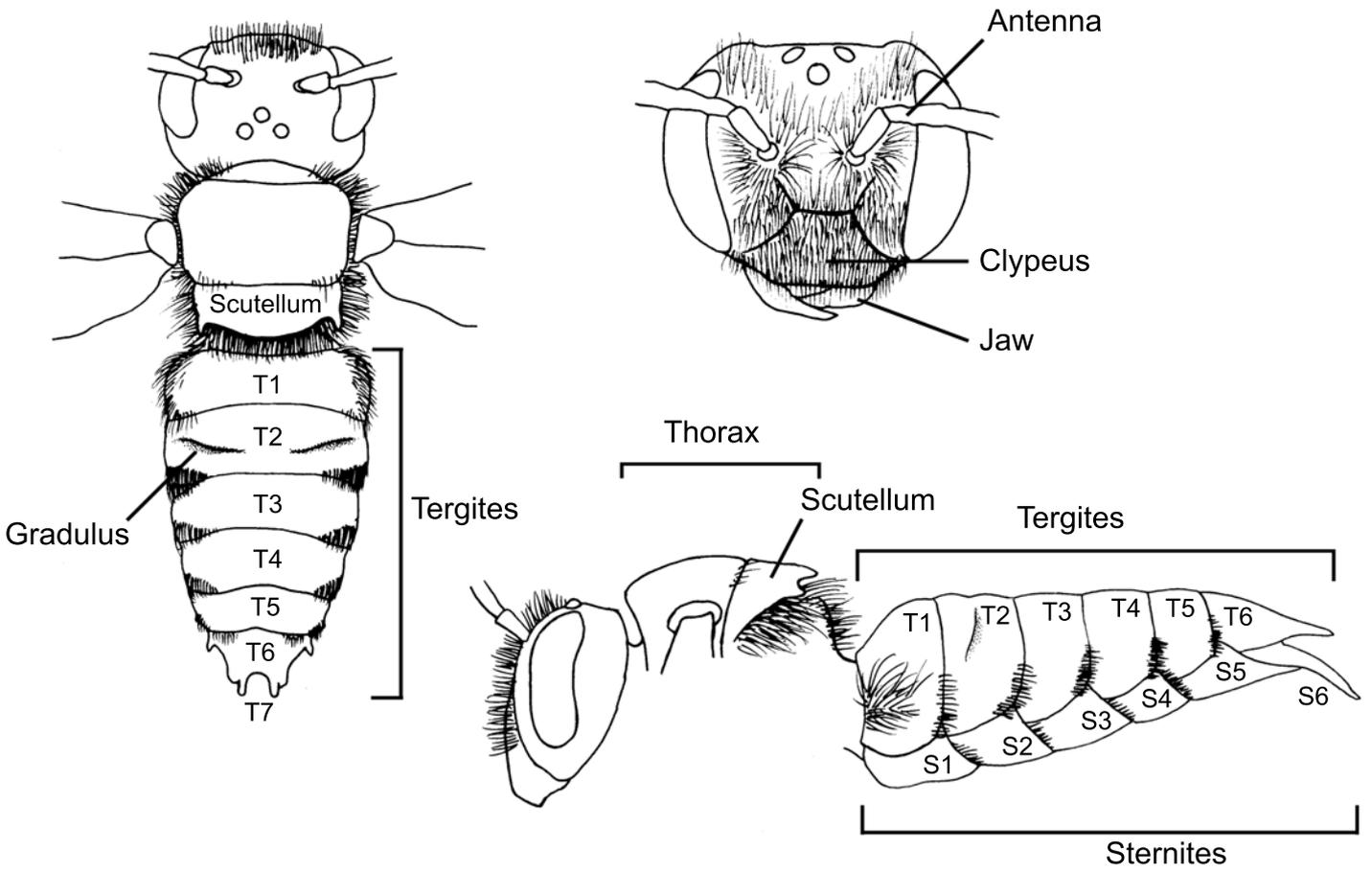
Natural History

Coelioxys (their various English names are: Sharp-tailed Bees, Sharp-abdomen Bees and Sharp-bellied Bees) are among those known as cuckoo bees because the larvae grow up on food stolen from Leaf-cutter Bees (*Megachile* Latreille) or Flower Bees (*Anthophora* Latreille). The genus *Megachile* probably includes the closest relatives of *Coelioxys*. Female *Megachile* construct nests of larval cells from leaves and provision each cell with a mixture of pollen and nectar for the young. A female *Coelioxys* will seek these out and apparently uses its sharp abdomen to pierce the cells. An egg is then laid in the *Megachile* cell. The egg of the *Coelioxys* hatches before that of the *Megachile* and the newly-hatched larva crushes the *Megachile* egg with its large jaws. The *Coelioxys* larva can then feed on the contents of the cell. Pupation occurs within a cocoon spun within the host cell where the larva overwinters as a prepupa. The genus *Anthophora* excavates nest burrows in sandy soil or rotting wood, where they may also become the hosts of *Coelioxys* larvae. As is the case with other cuckoo bees, each species of *Coelioxys* is a cuckoo (cleptoparasite) only of certain host species. In Britain, *Coelioxys* can be seen on the wing from June until September, often on flowers feeding with its long tongue. Female *Coelioxys* should be treated with care as they may sting; males are said to emit an unpleasant odour when handled.

How to use this guide

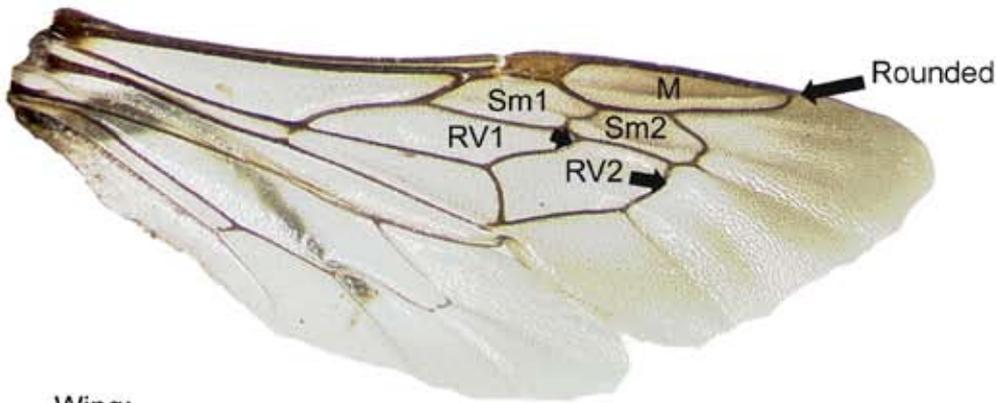
This guide is designed to allow easy identification of the British *Coelioxys* species. The diagrams on page 2 show the body parts mentioned. Page 3 shows how to recognise the genus and separate the sexes. The genus is very distinctive as the females have a very distinct sharp abdomen and the males have a distinctly spiny abdomen, unlike any other British bees.

However, the different species of *Coelioxys* may be difficult to distinguish in the field. Page 4 illustrates how similar they are in general appearance and gives a guide to body size. Each species can be cross-compared using the pictures on pages 5-6. Extra care may be needed when dealing with worn specimens, where hair bands may have been abraded away. Notes about each of the species follow on page 7.



Diagrams showing the body parts mentioned in this guide.

How to recognise a *Coelioxys*



Eyes: hairy

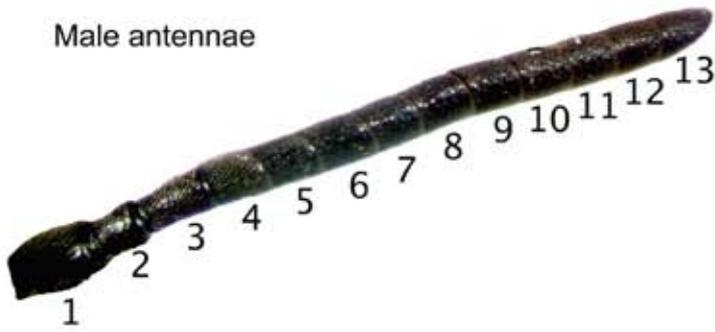


Scutellum: toothed

Wing:
Clouded forewings (front wings) with 2 submarginal cells.
Recurrent vein 1 is in submarginal cell 2
Recurrent vein 2 is in submarginal cell 2
Marginal cell rounded

How to sex your specimen

Male antennae



Males have 13 antennal segments.

Male abdomen



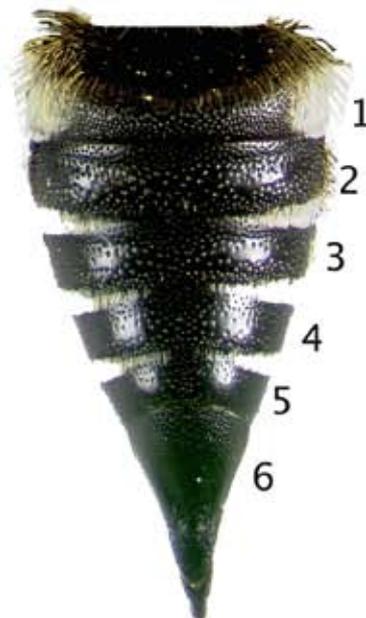
Males have 7 abdominal segments and a spiny abdomen.

Female antennae



Females have 12 antennal segments.

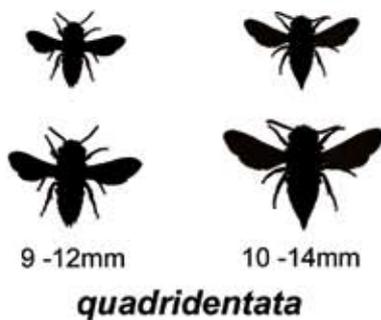
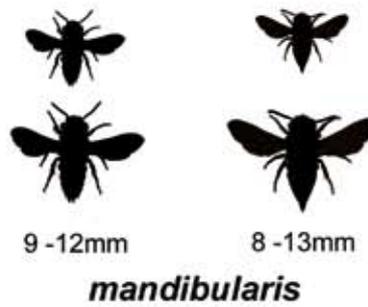
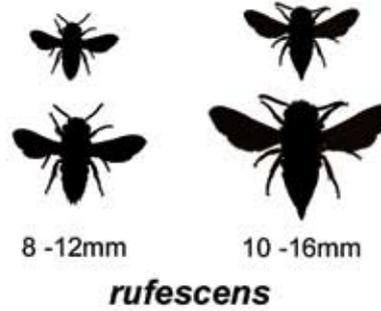
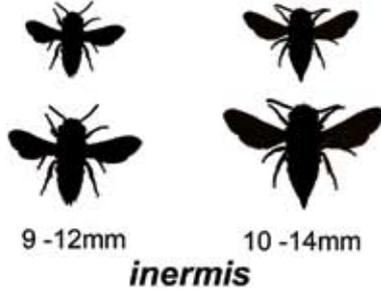
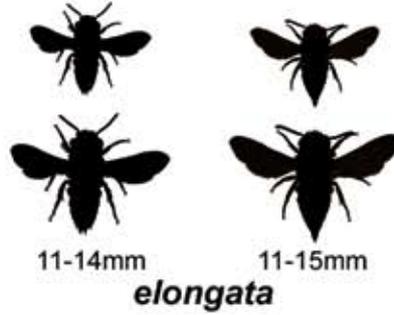
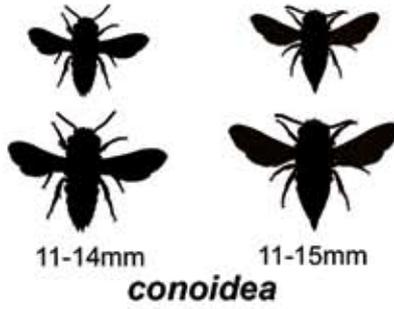
Female abdomen



Females have 6 abdominal segments and a long, almost triangular abdomen.

Male

Female



conoidea

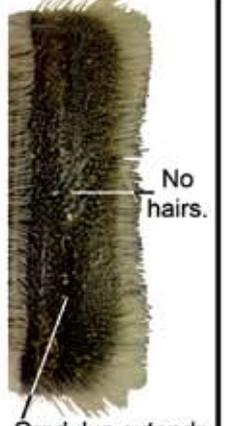
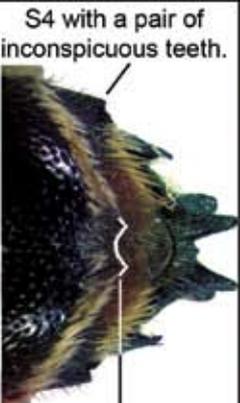
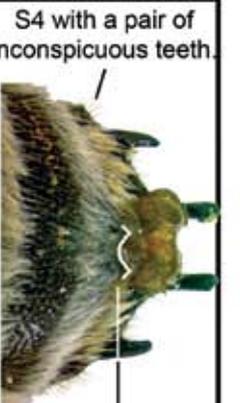
elongata

inermis

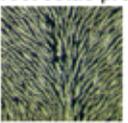
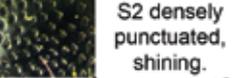
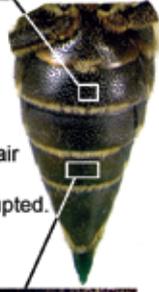
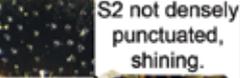
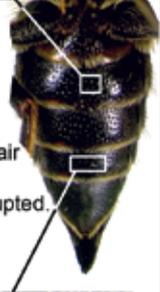
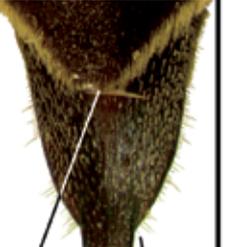
rufescens

mandibularis

quadridentata

<i>conoidea</i>	<i>elongata</i>	<i>inermis</i>	<i>rufescens</i>	<i>mandibularis</i>	<i>quadridentata</i>
	 Hairs on face golden white.	 Hairs on face golden white.		 Hairs on face white.	
 T2-T5 hairs bands widely interrupted.	 T2-T5 hair bands uninterrupted in fresh specimens.	 T2-T5 hair bands uninterrupted in fresh specimens	 T2-T5 hair bands uninterrupted.	 T2-T5 hair bands interrupted.	 T2-T5 hair bands uninterrupted.
 S2-S4 hair bands interrupted.	 S2-S4 hair bands uninterrupted.	 S2-S4 hair bands uninterrupted.	 S2-S4 hair bands uninterrupted.	 S2-S4 hair bands interrupted.	 S2-S4 hair bands uninterrupted.
 No hairs. Gradulus shining.	 No hairs. Decumbent hairs that do not obscure punctuation.	 No hairs. Decumbent hairs that do not obscure punctuation.	 No hairs. Smooth area behind gradulus.	 Decumbent hairs continue far into middle. Decumbent hairs that obscure punctuation.	 No hairs. Gradulus extends across T2.
 S4 with a pair of prominent teeth. Semi-circular notch with angles at corners.	 S4 with a pair of prominent teeth. Slight or no notch.	 S4 with a pair of prominent teeth. Slight or no notch.	 S4 with a pair of inconspicuous teeth. Semi-circular notch with angles at corners.	 S4 with a pair of prominent teeth. Slight or no notch.	 S4 with a pair of inconspicuous teeth. Semi-circular notch with angles at corners.
Males of these two species cannot be distinguished without examining the internal genitalia.					

Females

<i>conoidea</i>	<i>elongata</i>	<i>inermis</i>	<i>rufescens</i>	<i>mandibularis</i>	<i>quadridentata</i>
 <p>Ridge on face between antennae.</p>  <p>Clypeus with short hairs. No erect setae project.</p> 	 <p>Erect setae project from clypeus.</p> 	 <p>Erect setae project from clypeus.</p> 	 <p>No erect setae projecting from clypeus.</p> 	 <p>Jaw square.</p>  <p>Erect setae project from clypeus.</p> 	 <p>Erect setae project from clypeus.</p> 
<p>Gradulus interrupted.</p>  <p>T2-T5 hair bands widely interrupted.</p>	<p>Gradulus interrupted.</p>  <p>T2-T3 hair bands uninterrupted (but easily abraded).</p>	<p>Gradulus interrupted.</p>  <p>T2-T3 hair bands uninterrupted (but easily abraded).</p>	<p>Gradulus uninterrupted.</p>  <p>T2-T4 hair bands uninterrupted.</p>	<p>Gradulus interrupted.</p>  <p>T2 & sometimes T3 hair bands interrupted.</p>	<p>Gradulus uninterrupted.</p>  <p>T2-T5 hair bands uninterrupted.</p>
 <p>S2-S4 hair bands widely interrupted.</p>	 <p>S2 densely punctuated, shining.</p>  <p>S2-S4 hair bands uninterrupted.</p>  <p>S4 very dense punctation, dull looking surface.</p>	 <p>S2 not densely punctuated, shining.</p>  <p>S2-S4 hair bands uninterrupted.</p>  <p>S4 not densely punctate surface polished.</p>	 <p>S2-S4 hair bands uninterrupted.</p>	 <p>S2 & sometimes S3 hair bands interrupted.</p>	 <p>S2-S4 hair bands uninterrupted.</p>
 <p>No notch.</p> <p>No tooth, edge nearly smooth.</p>	 <p>Extremely shallow notch.</p> <p>Small tooth.</p> <p>Short oval tooth.</p>	 <p>No notch.</p> <p>Small tooth.</p> <p>Short oval tooth.</p>	 <p>No notch.</p> <p>Rounded shoulder.</p> <p>Triangular tooth.</p>	 <p>V-shaped notch.</p> <p>Small tooth.</p> <p>Long oval tooth.</p>	 <p>No notch.</p> <p>No tooth.</p> <p>Short oval tooth.</p>

Notes on the species

Coelioxys conoidea (Illiger, 1806) (synonym: *vectis* Curtis, 1831)

Cleptoparasite of *Megachile maritima* (Kirby, 1802). Widespread but local in southern Britain. Unlike other species of *Coelioxys*, this species is occasionally locally common where found. It is found on coastal dunes, commons and heaths. The name *conoidea* refers to the conical abdomen of females.

Coelioxys elongata Lepeletier, 1841

Cleptoparasite of *M. willughbiella* (Kirby, 1802), *M. circumcincta* (Kirby, 1802) and has been observed inspecting *M. maritima* and *Anthophora bimaculata* (Panzer, 1798) nest burrows. This species flies low over the ground looking for its host's nests, often in a purposeful manner. Widespread but local. Found throughout mainland Britain from Cornwall to the Highlands in Scotland. It does appear to have a southerly and coastal bias with an apparent absence from the English Midlands, East Anglia and inland Scotland and Wales. The name *elongata* refers to the long abdomen of females.

Coelioxys inermis (Kirby, 1802)

Cleptoparasite of *M. centuncularis* (Linnaeus, 1758). Widespread but local, often in gardens. Found in southern Britain as far north as Carlisle and Yorkshire. The name *inermis* means "unarmed".

Coelioxys rufescens Lepeletier & Serville, 1825

Cleptoparasite of *M. circumcincta*, *Anthophora furcata* (Panzer, 1798), and also possibly *M. centuncularis* and *A. bimaculata*. Found in southern England as far north as Newcastle and Yorkshire but apparently rare in Wales. The name *rufescens* refers to the reddish colour of females of this species.

Coelioxys mandibularis Nylander, 1848

Cleptoparasite of *M. dorsalis* Perez, 1879 (synonym: *leachella* and *argentata*), *M. circumcincta* and *M. maritima*. This species is listed as Rare (category 3) in the Red Data Book for British invertebrates. It has been recorded from several coastal sand dune systems in South England and Wales but has apparently disappeared from some. The name *mandibularis* refers to the characteristic squarish jaw of the female.

Coelioxys quadridentata (Linnaeus, 1758)

Cleptoparasite of *A. furcata*, *A. quadrimaculata* (Panzer, 1798) and *M. circumcincta*. This species is listed as Rare (category 3) in the Red Data Book for British invertebrates. A very local species of southern England as far north as Yorkshire and with a single record from Glamorgan. Its hosts nest in a variety of habitats so *C. quadridentata* is not known to show a clear habitat preference. The name *quadridentata* refers to the four tooth-like projections on the abdomen of the male.

Citation

This work may be cited as:

Rowson, R. & Pavett, M. 2008. *A visual guide for the identification of British Coelioxys bees*. 7pp. Privately published, Cardiff, UK.

Acknowledgements

Cover photo (*C. inermis*) copyright Nigel Jones. Mike Wilson (Amgueddfa Cymru - National Museum Wales) for the use of photographic equipment and access to specimens. Darren Mann (Oxford University Museum of Natural History) for the loan of material of *C. quadridentata*. Deborah Scott for material of *C. elongata*.

Bees, Wasps and Ants Recording Society

The UK Bees, Wasps and Ants Recording Society (BWARS) is a subscription based amateur recording society, operating under the aegis of the UK Biological Records Centre (BRC). The Society is affiliated to the British Entomological and Natural History Society. It aims to promote the recording of aculeate Hymenoptera in Great Britain and Ireland, and to foster links with similar societies and interested individuals throughout Europe. The Society exists to gather distribution and biological data on the aculeate hymenoptera (which includes many important pollinators), to provide advice and training to society members and the general public, and to promote understanding of aculeates.

BWARS website: <http://www.bwars.com>

Further reading

Archer, M. (revised) 2004 BWARS Members' Handbook, Centre for Ecology and Hydrology Natural Environment Research Council.

Buglife & Toole, C. 2007 Guide to bees of Britain. Field Study Council & Buglife.

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