*Written by **Adrian Chalkley** County Recorder Freshwater Invertebrates* *Find me onTwitter at https://twitter.com/Box_Valley*

Great Diving Beetle Identification

The Suffolk Naturalists' Society

www.sns.org.uk
Suffolk records to aquatics@sns.org.uk

It is generally known that Great Diving Beetles are some of our largest freshwater insects and most naturalists will know the name *Dytiscus marginalis*, but there are in fact 6 species of *Dytiscus* in Britain and Ireland as well as two other beetles which can potentially be confused with them. The object of this photo guide is to explain that confusion and allow accurate identification so that the average naturalist can record them.

Identification can be done with or without a simple hand lens & even from photographs taken in the field if you haven't got this key with you. One word of warning however the photos here were taken from preserved specimens and the yellow colours mentioned below have darkened over time. In the field they will appear brighter.

Great diving beetles often appear attracted to light and may be found in moth traps; confused by the polarization of light reflected from the laminated windscreens of cars they are sometimes found after crashing into parked cars. Of course, since they are good fliers, they may well visit even small garden ponds at least for a short visit before flying off again. Of course if you have a pond net and spend time investigating a larger pond or lake that you own, or maybe at a nature reserve where you volunteer then you may well find one of the species below in your net. If so please send in your records, see details in the box top right or use iRecord at http://www.suffolkbis.org.uk/SuffolkBRO

Firstly …. Here is how to examine your beetle, though you may prefer to do this in the net as they are quite difficult to hold still.

Examination photos ©Trevor Goodfellow , with thanks for permission to use.

If the Elytra (wing cases) are grooved then you have a female beetle (although there can be a few rare females that occur with smooth elytra)

Make sure you examine the colours of the head and the borders of the segment behind the head (the pronotum)

Also examine the underside because the colour of the plates and extent of black markings is vital

Why not run through this guide to identify the beetle above?

(Answer on the last page)

Firstly ….

Lets look at the two beetles which can cause confusion & so make sure you have a Great Diving Beetle

There are many beetles in the Dytiscidae family but the size of Great Diving Beetles makes them instantly recognisable as a genus, being between 22 and 39 mm long. People could get confused by the Great Silver Water Beetle (38 to 48 mm) which can be a similar size although it is usually larger. Also *Cybister lateralimarginalis is* a very rare beetle which could be mistaken for a Dytiscus as it is similar in size though broader & pear shaped. But only one dead female *Cybister* has been found since the 19th century (in West Lancashire) so finding one is so very unlikely it will not be further mentioned here.

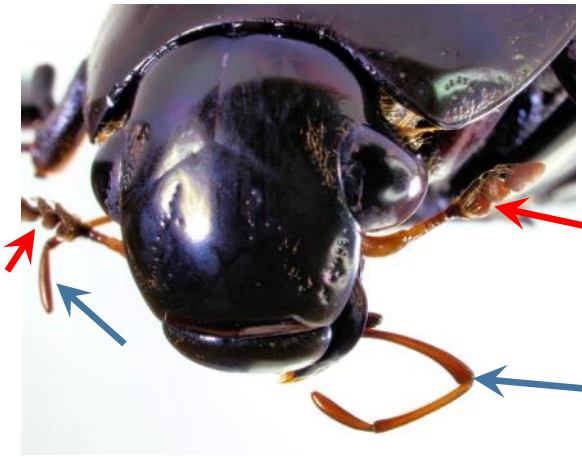
So Great Diving or Great Silver Water Beetle?

Look at the head of your beetle:

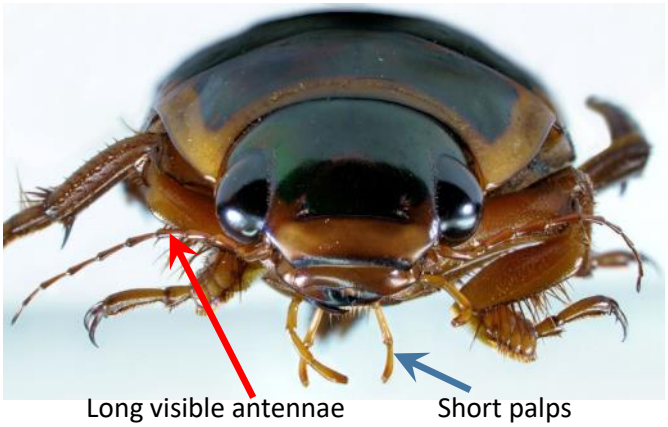
Great Diving Beetles have long conspicuous antennae with many segments as well as two 'palps' which appear to have 3 segments (a 4th is hidden).

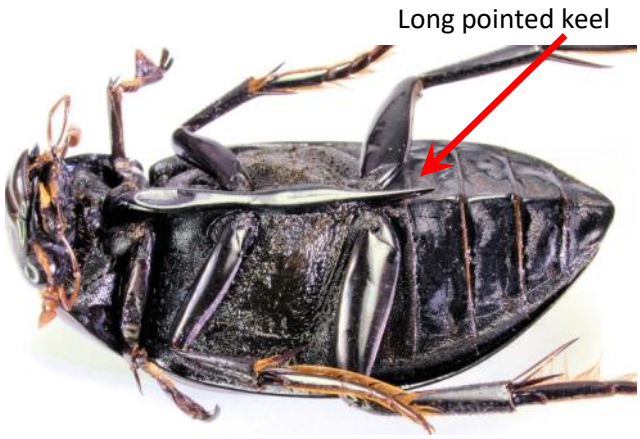
The underside of Dytiscus has no keel but has a two lobed 'meta coxal plate' between the hind legs. Silver Diving Beetles have short antennae which are usually hidden under the head with a club on the end and palps which are very obvious and much longer. The underside has a very long keel ending in one sharp point.

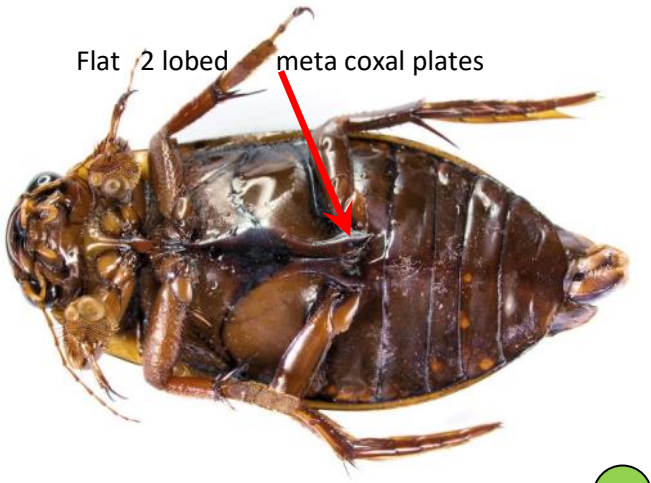
Great Silver Water Beetle
Hydrophilus piceus



Great Diving Beetle
Dytiscus sp.







Having made sure you have a Great Diving Beetle how do you find out which species you have?

B Start by checking the colour of the underside of the beetle, is it evenly black or reddish brown with rounded tips on the flat metacoxal plates? (see page 2 or below)

Or is the underside mostly yellow, maybe with some black marks with the metacoxal plates either bluntly or sharply pointed but not rounded. (**If so go to C on page 4**)

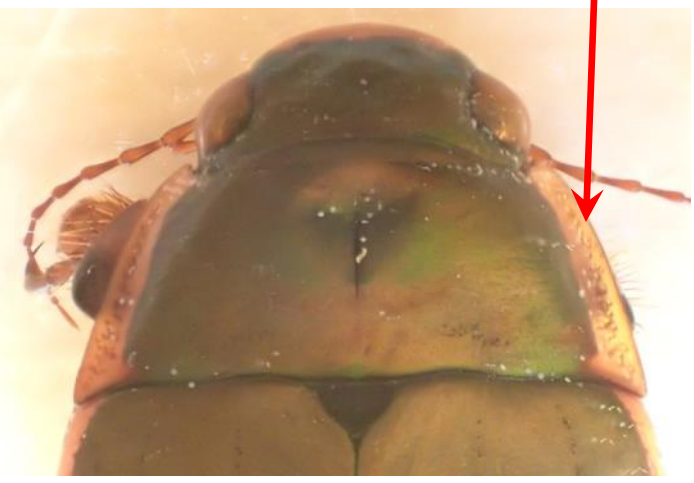
The Black-bellied Great Diving Beetle
Dytiscus semisulcatus

Small
22 to 30
mm long

Underside
black

Metacoxal
plates rounded

Broad yellow
sides to pronotum
No border front
or back



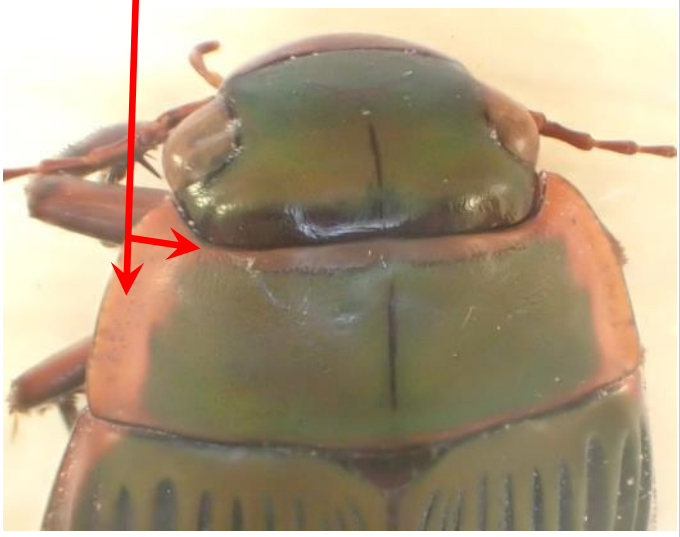
The largest Great Diving Beetle
Dytiscus dimidiatus

Large
32 to 38
mm long

Underside
red brown

Metacoxal
plates rounded

Broad yellow sides
to pronotum
Front narrowly
yellow



Dytiscus dimidiatus can sometimes have metacoxal lobes slightly elongated, though not really pointed; or the underside may be slightly more yellow red than the brown-red shown here. Don't be put off individuals do vary, the overall size and the hind margin of the pronotum having no more yellow than shown above confirms the ID.
Note: in the photos above the male has smooth elytra the female has the ridges. This is true of <u>most</u> Dytiscus.

From Page 3: if the underside is mostly yellow, maybe with some black marks & the metacoxal plates are either bluntly or sharply pointed instead of rounded then ……..

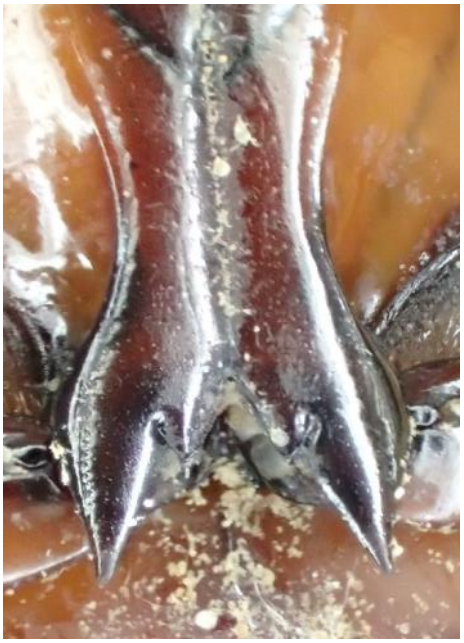
C Now you must decide, based on the photos below if the metacoxal plates are bluntly pointed or sharply pointed. Bluntly pointed will mean you have ***Dytiscus marginalis.*** If so check the yellow bands on the pronotum. In D. marginalis the front & rear margins are only a little narrower than the side ones; if you mistook the metacoxae lobes on D dimidiatus as bluntly pointed the rear margin will not be yellow or very, very thinly yellow.

If your beetle had sharp points to the metacoxal plates then go on to **D on page 5**

The Great Diving Beetle
Dytiscus marginalis
Bluntly pointed metacoxae
26 to 32 mm

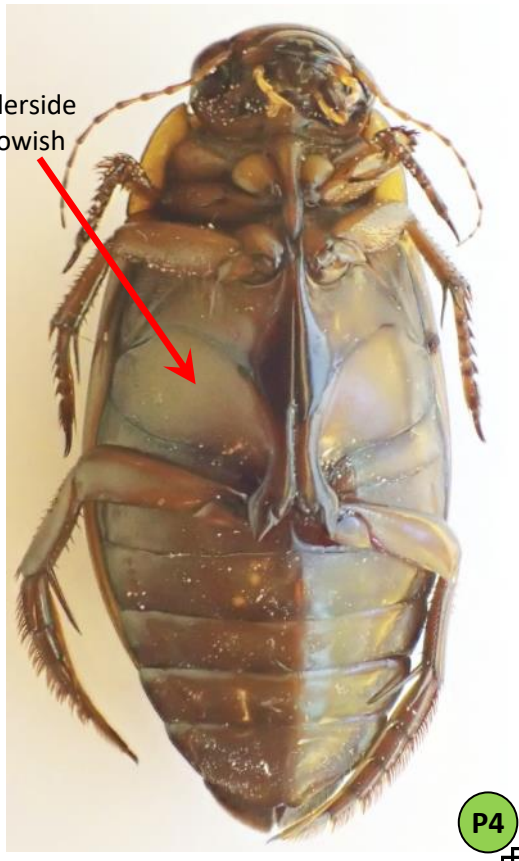
The Wasp Great Diving Beetle
Dytiscus circumflexus
Sharp pointed metacoxae
26 to 32 mm

A Great Diving Beetle
Dytiscus circumcinctus
Sharp pointed metacoxae
27 to 32 mm



The Great Diving Beetle
Dytiscus marginalis

Pronotum with yellow bands all round with the front & especially the back border nearly as wide as the sides. Compare with D circumcinctus & D circumflexus on P4



From Page 4: If the metacoxal plates are sharply pointed.

I have tried to use all photos of beetles from Suffolk but I have no photographs of ***Dytiscus lapponicus*** as *it* is mostly an insect of mountain lakes. In fact *D. lapponicus* occurs in a band from southern Ireland up to Scotland north of the Great Glen, from some low ground sites but mostly in the mountains. There is one other site in North Wales. However details to distinguish it (without photos) are as follows:

D Check the size of your beetle again. If it is 30mm **or less** in length, with the pronotum with a very wide yellow border all around (so that there is much more yellow & even less of a black centre than D marginalis) then you have ***Dytiscus lapponicus***.

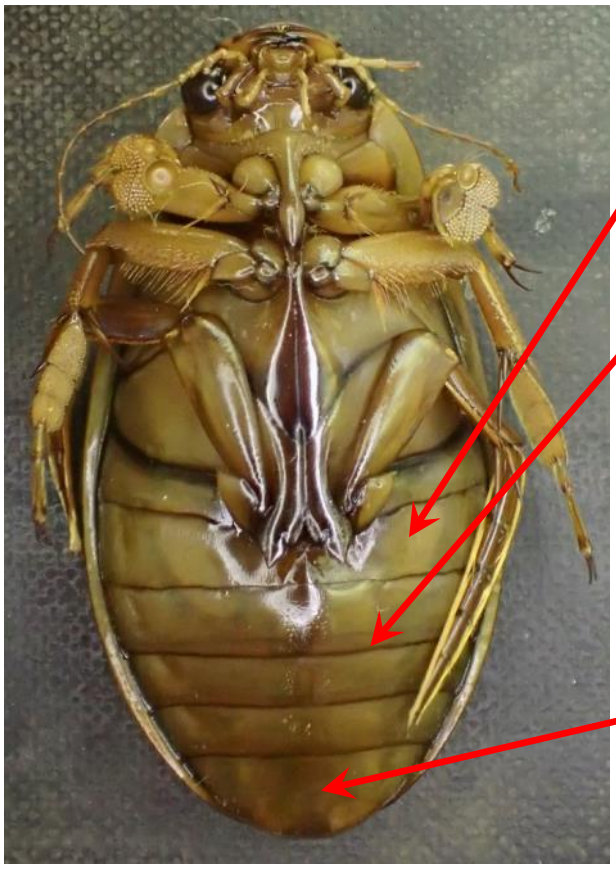
But if your beetle is 30mm or more in length and the pronotum has narrow yellow borders front and back with the sides being only a little wider, then you have *Dytiscus circumflexus* or *Dytiscus circumcinctus*. **See E below.**

E The metacoxal plates are sharply pointed, narrow borders on pronotum.

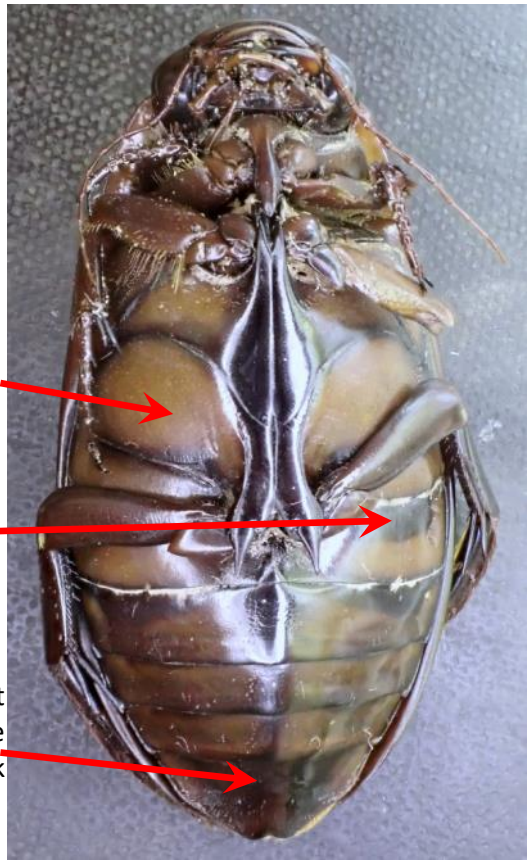
If the underside of your beetle is yellowish with wide dark edges, the metacoxae & the last sternite are dark; the eyes have no pale rim and the scutellum has a yellow center. You have ***Dytiscus circumflexus.***

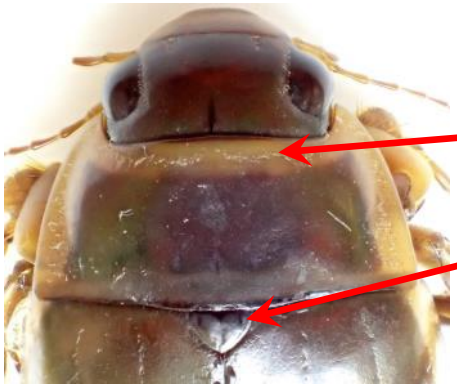
If the underside of your beetle is pale yellow with narrow dark edges, if the eyes have a pale rim and the scutellum is dark. (see photos below), then you have ***Dytiscus circumcinctus.***

A Great Diving Beetle
Dytiscus circumcinctus



The Wasp Diving Beetle
Dytiscus circumflexus





Narrower yellow borders front & esp. back

Scutellum Dark

Yellow centre