

Morphology of Dytiscus Marginalis



Dr. Sapna Kumari
+2 Zoology teacher.
M.R.D.Girls high school
Sitamarhi, Bihar, India.

ABSTRACT

- The presented study describes about the morphological features of male and female diving beetles named *Dytiscus marginalis*.
- Beetles were identified by hard exoskeleton and forewings, compound eyes, short and curved mandibles along with a pro-dilated tarsi.

Keywords : Exoskeleton, compound eyes, Antennae. Mandibles, Elytra, Ampulla, pro-dilated tarsi, suction-cup, Hydrodynamic.

INTRODUCTION

Dytiscus marginalis- A Great Diving Beetles are widespread, fresh water beetle having 26 species in this genus, distributed in Europe, Asia, North Africa and North and central America.

Like : *D. marginalis*, *D.verticalis*, *cybister fimbriolatus* etc.

MORPHOLOGY

Male *Dytiscus marginalis* and Female *Dytiscus marginalis*

- These are excellent swimmer having a sleeky body.
- *Dytiscus marginalis* has a robust, rounded shape body which is 2.2-4.4 cm (27-35 mm) in length. Females are usually larger than the male.
- The body of the beetles are compressed top to bottom and keeled laterally and ventrally, with hydrodynamic body.

COLOUR : The back or wing cases [elytra] of the *D. marginalis* are of brown to black dark coloured , but yellow colour found on their abdomen and legs. Females are of dull brown colour.

- Wing cases of males are shiny and smooth. But females have finely grooved elytra or wing-cases. Apex part is not grooved. However some female do have smooth wing cases too.



BODY-PARTS :

- Body of *D. marginalis* is differentiated into Head , thorax and abdomen.
- The head possess a single pair of antennae and a pair of compound eyes.
- The thorax possess two pair of wings along with three pair of legs.
- The abdomen contains reproductive and digestive organs embedded into it.



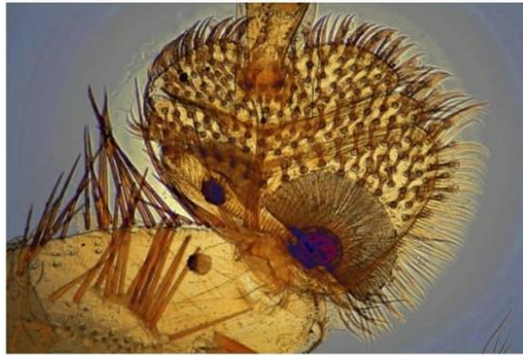
MOUTH_PARTS

Antennae

- *D. marginalis* showing distinct mouth parts.
- *D. marginalis* has well developed chemical receptors located on antennae which are responsible for odor. Maxillary and labial palpi are responsible for taste.
- Jaws of a great diving beetles are very strong .

Mandibles

- Mandibles have grooves on their inner edge and they are short curved and sharpened due to which they are capable to pierce the prey. Beetle first inject the digestive enzyme into their prey then sucking and ingesting body-fluid of the prey.



LEGS : Foreleg , Midleg and Hind leg

- Legs are differentiated into foreleg , midleg and hind leg so , three pairs of legs are present.
- First two pair of legs in male are modified to form suction cup which provide a strong grip during mating. The 2nd pair or the midleg has a reduced sucker, but the females never have the suction-cup on the front legs that the male have.
- The fore tarsi of male beetle have an expanded plate with two large suction cups and dozen of additional smaller cups.
- The male beetles have long swimming-hairs on both sides of hind legs [meta tibiae] But in the female these swimming-hairs are only present on the outer edge.

RESPIRATORY – ORGANS

- The respiration spot on the hind tip of the abdomen is closed by elytra which covers the back. The boarder of the air supply is closed under the elytra.
- The adults breathe by going to the surface by collecting air under elytra and are able to breathe this collected air by using spiracles (air holes).

REPRODUCTIVE-ORGANS

- The first two pair of the legs in male are equipped with suction-cup , enabling them to obtain a secure grip ,while mating with Female.
- Mating occurs from spring to autumn.The beetle reproduces by laying eggs under water in the mesophyll of an aquatic plant leaf.
- Eggs hatch within a few weeks . Then after a tiny, transparent larva comes out.
- Larvae grow gradually and reach at the length of 3-60 mm at maturity then pupate in soil or mud nearby the water.
- The pupal-stage lasts for 5-14 days after which the new beetle emerges out .

Pupal stage



CONCLUSION :

- The study of the external features of *D. marginalis* reveal that every organ of this beetle plays an significant role in catching much larger prey such as tadpoles fish and even snake due to having worthwhile body-structure , carnivorous behavior and advanced chemical senses for detecting the prey.

REFERENCES

1. Getting a Grip 2011-11-05.
2. Great Diving Beetle *Dytiscus* 2008-07-29.
3. Jackson , Dorothy J (September 1959). "The Association of a slime Bacterium with the inner Envelope of the egg of *Dytiscus marginalis* (coleptera) , and the less common occurrence of a similar Bacterium on the egg of *D. semisulcatus* ".