

A specimen of *Lobatus gigas* (Caenogastropoda, Strombidae) with an abnormal eye

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A specimen of the Caribbean species *Lobatus gigas* from Bonaire Island with an aberrant right eye is reported upon and illustrated. The cause of this aberration remains unknown.

Key words: Gastropoda, *Lobatus*, eyes, aberration, teratology.

INTRODUCTION

Animals of the gastropod family Strombidae are well known for their conspicuous eyes at the distal tip of long eyestalks. Already Rumphius (1705) noted "(...) close behind it, one will see two short little Horns, with eyes on them, like Crabs do." (translation adopted from Beekman, 1999: 158). Abbott (1960) noted that these eyes are "(...) usually adorned with circular rings of yellow, orange or red colour.". These pigmented rings encircle the pupil of the eye of which the outer edge is defined by the innermost circle (Seyer, 1994), and is

here referred to as the iris (following Seyer, 1994, 1998). It should be noted however that this iris, nor the eye itself, is homologous with the iris in vertebrates. Kronenberg & Berkhout (1984: fig. 12) illustrated a number of eyes of strombids. Besides the colours mentioned by Abbott (1960), the figures in Kronenberg & Berkhout (1984) also show black, white and violet circles. Based on a small number of then existing colour images of living specimens Kronenberg & Berkhout (1984: 272, caption fig. 12) concluded that these coloured rings were different between, yet constant within every species.

Apart from Strombidae, the living species of the stromboidean families Rostellariidae (see e.g. figures in Man in 't Veld & Visser, 1998), Seraphsidae (see e.g. Jung & Abbott, 1967: pl. 319, pl. 321 bottom figure) and Rimellidae (pers. obs.) also have their eyes at the tip of long peduncles. This is a synapomorphy of these families within the Stromboidea, setting these apart from Aporrhaidae and Struthiolariidae. Within this clade the families Strombidae and Rimellidae have a sinus in the abapical part of the outer lip, the



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so-called strombid notch that serves as a peeping hole for the right eye.

AN ABERRANT EYE

On 19 August 2013, around noon, Ms Vanessa Costa was scuba-diving with a group in the 'White Hole' (also known as the Blue Hole), a dive site at the eastern coast of Bonaire, Dutch Caribbean at 12°05'39"N 68°13'40"W.

This dive site is located in front of Lac Bay, a very shallow lagoon that merges into a mangrove forest. The White Hole is an oblong pit approximately 50 x 100 metres, with a maximum depth of about 13 metres. On that day the water temperature was 28°C. At a depth of 12 metres, she encountered a specimen of *Lobatus gigas* (Linnaeus, 1758) (Fig. 1). Upon closer examination this specimen had an aberrant right eye in that there were two miniature eyes on the tip of the right eye stalk, distinctly smaller than the normal left eye, with the two irises touching one another, not overlapping (Fig. 2).

DISCUSSION

Gréton et al. (1993) examined the influence of retinoic acid during the early development of some fresh water gastropods. As a result, defects on the eyes were observed that ranged from a slight reduction in size to complete absence of the eyes. They also observed that one eye of the embryo could be affected more severely than the other (Gréton et al., 1993: 358). From these observations it is clear that at the presence of a substance, that in normal conditions does not occur in water, can affect the development of eyes in gastropods. Although the duplication of one of the eyes as in the case reported here was not observed by Gréton et al. (1993), I do not exclude the possibility that some substance (or a combination of substances) might cause an aberration

Figs 1, 2. *Lobatus gigas* White Hole, Bonaire Island, 19.VIII.013.

1, Adult specimen encountered at 12 m depth; **2,** Detail of Fig. 1, note aberrant right eye. Photo's: Vanessa Costa.

as reported here. There are also other explanations, such as damage to the soft tissues (i.e. the eyestalk) at some point in the development of the animal or a genetic defect (whether or not exacerbated by inbreeding).

The specimen was not collected and has not been examined any further.

Despite this aberration, the animal grew to full maturity as one can judge from the complete and already slightly thickened outer lip. Therefore it cannot be excluded that the animal will reproduce or has already reproduced. A survey of the population of *Lobatus gigas* around the Island of Bonaire might provide an answer to the causes of this strange aberration.

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RUMPHIUS, G.E., 1705. D'Amboinsche Rariteitkamer, Behelzende eene Beschryvinge van allerhande zoo weeke als harde Schaalvisschen, te weeten raare Krabben, Kreeften, en diergelyke Zeedieren, als mede allerhande Hoorntjes en Schulpen, die men in d'Amboinsche Zee vindt: Daar beneven zommige Mineraalen, Gesteenten, en soorten van Aarde, die in d'Amboinsche, en zommige omleggende Eilanden gevonden worden. Verdeelt in drie Boeken, (...). 1-340, pls. I-XL, index, Amsterdam.

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