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Glaucus atlanticus


Glaucus atlanticus (common names include the **sea swallow**, **blue angel**, **blue glaucus**, **blue dragon**, **blue sea slug** and **blue ocean slug**) is a species of small, blue sea slug, a pelagic aeolid nudibranch, a shell-less gastropod mollusk in the family Glaucidae.^[2]

These sea slugs are pelagic: they float upside down by using the surface tension of the water to stay up, where they are carried along by the winds and ocean currents. *Glaucus atlanticus* makes use of countershading: the blue side of their body faces upwards, blending in with the blue of the water. The silver/grey side of the sea slugs faces downwards, blending in with the sunlight reflecting on the ocean's surface when viewed upwards underwater.

Glaucus atlanticus feed on other pelagic creatures, including the Portuguese man o' war and other venomous siphonophores. This sea slug stores stinging nematocysts from the siphonophores within its own tissues as defence against predators. Humans handling the slug may receive a very painful and potentially dangerous sting.

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<i>Glaucus atlanticus</i>	
	
Scientific classification	
Kingdom:	Animalia
Phylum:	Mollusca
Class:	Gastropoda
(unranked):	<div><ul style="list-style-type: none">■ clade Heterobranchia■ clade Euthyneura■ clade Nudipleura■ clade Nudibranchia■ clade Dexiarchia■ clade Cladobranchia■ clade Aeolidida</div>
Superfamily:	Aeolidioidea

Taxonomy

This species looks similar to, and is closely related to, *Glaucus marginatus*, which is now understood to be not one species, but a cryptic species complex of four separate species that live in the Indian Ocean and Pacific Ocean.^{[1][3]} It shares the common name "Blue Dragon" with *Pteraeolidia ianthina*.

Description

At maturity *Glaucus atlanticus* can be up to 3 centimetres (1.2 in) in length.^[4] It is silvery grey on its dorsal side and dark and pale blue ventrally. It has dark blue stripes on its head. It has a flat, tapering body and six appendages that branch out into rayed, finger-like cerata.^[5]

The radula of this species bears serrated teeth.^[6]

Buoyancy and coloration

With the aid of a gas-filled sac in its stomach, *G. atlanticus* floats at the surface. Due to the location of the gas sac, this species floats upside down. The upper surface is actually the foot (the underside in other slugs and snail), and this has either a blue or blue-white coloration. The true dorsal surface (carried downwards in *G. atlanticus*) is completely silver-grey. This coloration is an example of countershading, which helps protect it from predators that might attack from below and from above.^[7] The blue coloration is also thought to reflect harmful UV sunlight.

Distribution and habitat

This nudibranch is pelagic, and there is some evidence that it occurs throughout the world's oceans, in temperate and tropical waters. It has been recorded from the east and south coasts of South Africa, European waters, the east coast of Australia, and Mozambique.^[3] The *G. atlanticus* species geographical range increased northward by 150 km in the Gulf of California.^[8]

Glaucus atlanticus was recently found in the Humboldt Current ecosystem in Peru in 2013, and off Andhra Pradesh in India in 2012. This is in line with the known habitat characteristics of the species: they live in warm temperate climates in the Southern Pacific, and in circumtropical and Lusitanian environments. Before finding *Glaucus atlanticus* off Andhra Pradesh, these nudibranchs were documented as having been seen in the Bay of Bengal and off the coast of Tamil Nadu, India, over 677 kilometers apart.^[9] *Glaucus atlanticus* was also

Family:	Glaucidae
Genus:	<i>Glaucus</i>
Species:	<i>G. atlanticus</i>
Binomial name	
<i>Glaucus atlanticus</i> <div>Forster, 1777</div>	
Synonyms ^[1]	
<div><ul style="list-style-type: none">■ <i>Doris radiata</i> Gmelin, 1791<div>(synonym)</div>■ <i>Glaucus distichoicus</i> d'Orbigny, 1837■ <i>Glaucus flagellum</i> Blumenblach, 1803 (synonym)■ <i>Glaucus hexapterigius</i> Cuvier, 1805 (synonym)■ <i>Glaucus lineatus</i> Reinhardt & Bergh, 1864■ <i>Glaucus longicirrhus</i> Reinhardt & Bergh, 1864</div>	



The blue sea slug is shown here out of water, and thus collapsed; these were found on a beach. Picking up the animal can result in a painful sting, with symptoms similar to those caused by the Portuguese man o' war.



The slug in the water

produce egg strings.

Sting

The *Glaucus atlanticus* is able to swallow the venomous nematocysts from siphonophores such as the Portuguese man o' war, and store them in the extremities of its finger-like cerata.^[14] Picking up the animal can result in a painful sting, with symptoms similar to those caused by the Portuguese man o' war.^[16]

References

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recently found off Bermuda in January 2016.^[10]

Although these sea slugs live on the open ocean, they sometimes accidentally wash up onto the shore, and therefore they may be found on beaches.^[11]

Life history and behavior

G. atlanticus preys on other larger pelagic organisms. The sea slugs can move toward prey or mates by using their cerata to make slow swimming movements.^[12] ^[13] They are known to prey on the dangerously venomous Portuguese man o' war (*Physalia physalis*); the by-the-wind-sailor (*Velella velella*); the blue button (*Porpita porpita*); and the violet snail, *Janthina janthina*. Occasionally, individuals attack and eat other individuals in captivity.

G. atlanticus is able to feed on the Portuguese man o' war due to its immunity to the venomous nematocysts. The slug consumes the entire organism and appears to select and store the most venomous nematocysts for its own use. The nematocysts are collected in specialized sacs (cnidosacs) at the tip of the animal's cerata, the thin feather-like "fingers" on its body. Because *Glaucus* concentrates the venom, it can produce a more powerful and deadly sting than the Man o' War on which it feeds.^[14]


Like almost all heterobranchs, *Glaucus* is a hermaphrodite, having both male and female reproductive organs. Unlike most nudibranchs, which mate with their right sides facing, sea swallows mate with ventral sides facing.^[15] After mating, both animals

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Further reading

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External links

- Sea Slug Forum (http://www.seaslugforum.net/find/glauatla)
- "Glaucus atlanticus" (http://www.eol.org/pages/451180) at the *Encyclopedia of Life* 
- "Blue Sea slug: Glaucus Atlanticus, Gold Coast, Australia" (https://www.youtube.com/watch?v=aiYyo3PBs20). *YouTube*. 17 November 2017.

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