

The Bold and the Beautiful: *Hermisenda crassicornis*

Phylum Mollusca / Class Gastropoda / Subclass Opisthobranchia
Order Nudibranchia / Family Glaucidae
described in 1831 by Eschscholtz.

By **MARGOT STILES**

High Tide Times, Birch Aquarium

As striking as a monarch butterfly, this colorful sea slug displays a high-contrast pattern that attracts people, but warns away natural predators. Divers sometimes refer to this nudibranch simply as *Hermisenda*, but its full name is pronounced “her-mih-SIN-dah crass-ih-COR-niss). Sea slugs in general are called nudibranchs, and are most closely related to sea hares, limpets, and snails.

You can find *Hermisenda* in the La Jolla and Point Loma kelp forests, anywhere from the tidepools to subtidal waters. The species ranges along the Pacific coast from Alaska to Baja California, and is also found in Japan.

One way to start your search for nudibranchs is to look for their favorite food. *Hermisenda* and other aeolid nudibranchs are classically found on hydroids, but may also prefer sea pens, anemones, colonial ascidians (sea squirts), and small crustaceans. *Hermisenda* is only a few inches long and can be easily recognized by its iridescent blue sides and the bright orange “tassels” on its back.

When most people think of sea slugs, brainpower isn’t the first thing that comes to mind. However, this species is well-known as a model organism for studying memory and behavior. Just as a dog or cat comes running at the sound of a can opener or the smell of food, *Hermisenda* sea slugs can be trained to navigate mazes using the chemical “smell” of their favorite foods. Underwater smells also allow sea slug eggs to postpone development until food is readily available.

All sea slugs are hermaphrodites, meaning that each animal has both eggs and sperm. Pairs of nudibranchs may spend more than 30 minutes together, but the actual exchange of sperm lasts only a few seconds. Eggs are then packaged in coils of white ribbon and affixed to a hard surface. A short time later, tiny *Hermisenda* hatch and can be seen every few feet across the sea floor.

Some sea slugs die of old age or disease, but more than a few are eaten by fish and other slugs. To defend itself against predators, *Hermisenda* collects stinging cells known as nematocysts from the anemones and other animals in its diet. The nematocysts are then carried on its back in brilliant orange “tassels” known as cerata to irritate the skin of any creature that comes in contact with them.

However, the mosshead warbonnet fish can circumvent this defense and consume unfortunate sea slugs without touching their cerata. You can also see an online video of a truly unlucky *Hermisenda* being eaten in about 200 milliseconds by the voracious

Navanax sea slug. Against these unusual predators, *Hermisenda*'s unmistakable colors are no more protective than a neon "Eat Me" sign. Look for intact *Hermisenda* in their full glory in the Birch Aquarium's tank 18.

Additional Resources

Hermisenda horror movie: <http://www.life.uiuc.edu/slugcity/movies.html> (R.Gillette)

Avila, C. 1998. Chemotaxis in the nudibranch *Hermisenda crassicornis*: Does ingestive conditioning influence its behaviour in a Y-Maze? *Journal of Molluscan Studies*. vol. 64, no. 2, pp. 215-222.

Avila, C. 1998. Competence and metamorphosis in the long-term planktotrophic larvae of the nudibranch mollusc *Hermisenda crassicornis* (Eschscholtz, 1831) *Journal of Experimental Marine Biology and Ecology*. vol. 231, no. 1, pp. 81-117.

Behrens, D.W. 1998. *Hermisenda crassicornis*, nudibranch of the week. The Slug Site. <http://slugsite.us/bow/nudiwkps/nudiwk24.html>

Behrens, D.W. 1999. *Hermisenda crassicornis* revisited, nudibranch of the week. The Slug Site. <http://slugsite.us/bow/nudwk184.htm>

Birkeland, C. 1974. Interactions between a sea pen and seven of its predators. *Ecological Monographs*. vol. 44, no. 2, pp. 211-232.

Crow, T. 1988. Molecular and molecular analysis of associative learning and memory in *Hermisenda*. *Trends In Neuroscience*. vol. 11, no. 4, pp. 136-142.

Rutowski, R.L. 1983. Mating and egg mass production in the aeolid nudibranch *Hermisenda crassicornis* (Gastropoda: Opisthobranchia) *Biological Bulletin*. vol. 165, no. 1, pp. 276-285.

Sea Slug Forum. <http://www.seaslugforum.net>
see notes by W.B.Rudman and C.Megina.

Slug City. R.Gillette's lab group. <http://www.life.uiuc.edu/r-gillette/>