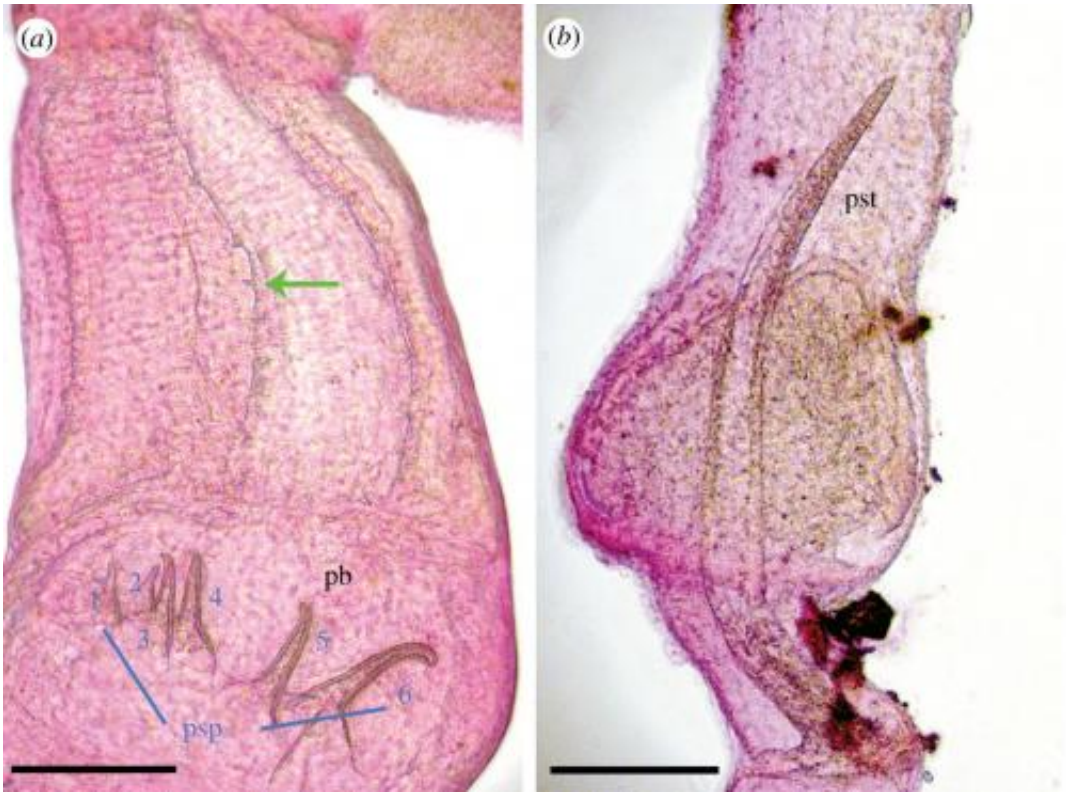
Researchers discover sea slugs that stab each other in the head after copulation (w/ Video)

November 13 2013, by Bob Yirka



Bipartite penis of Siphopteron sp. 1 consisting of (a) a penile bulb that transfers sperm and (b) the penile stylet for traumatic injection. The penile bulb usually has six spines and terminates in an elongated cone-shaped protrusion that carries few small spines (one such spine indicated by arrow). Scale bars indicate 100 µm; pb, penile bulb; psp, penile spines; pst, penile stylet. Credit: *Proc. R. Soc. B* 7 January 2014 vol. 281 no. 1774 20132424. Published 13 November 2013 doi: 10.1098/rspb.2013.2424

(Phys.org) —A trio of researchers, two from Australia and one from Germany has discovered a new kind of sea slug that lives on the Great Barrier Reef—a kind that also stab each other in the head after copulating. In their paper published in *Proceedings of the Royal Society B: Biological Sciences*, the team describes how they found the new slug and its unique mating style.

The researchers collected samples of the slug (for now named simply *Siphopteron species 1*) and brought them back to the lab for study. There they were able to watch 16 different pairs of the sea dwelling creatures as they mated. They noted that the slugs, like many other species, are hermaphrodites (they have both male and female sex organs). They also noted that each of the slugs had a penis that was as long as its body (approximately 2-3 millimeters)—which was also forked. One branch ended with a knob shaped penile bulb ringed by spines. It was used for entering its partner's female genitalia. The other branch had a sharp spine at its tip that was used for piercing the skin covering its partner's forehead shortly after copulation.

In watching the sea slugs mate, the researchers noted that they came together, inserted their penile bulbs into each other's female parts and deposited a load of sperm. Immediately thereafter, both reached with their other penis branch and jabbed the other in the forehead, above and between the eyes—once piercing was complete, prostate fluid was injected though the same penile tip into the head of the other slug.

The researchers note that many other organisms have been observed jabbing each other with various appendages as part of the mating ritual, but to date, they believe this is the first instance of an organism aiming specifically for the head. They also note that they can't say why the sea slugs do so, but do offer some possibilities. The dose of prostate fluid may serve to stun one another into holding onto the sperm that has been deposited, is but one possibility—another is that it allows for the

injection of hormones that prevent the partner from digesting the sperm. In any case, why the slugs aim for the head specifically, is clearly a mystery, as any spot on a slug's body would normally do.

The team plans to continue their research to see if they can find out why the sea slugs stab each other in the head and promise to report back if they find out.

More information: Cephalo-traumatic secretion transfer in a hermaphrodite sea slug, *Proc. R. Soc. B* 7 January 2014 vol. 281 no. 1774 20132424. Published 13 November 2013 DOI: 10.1098/rspb.2013.2424

Abstract
Mating rituals in the animal kingdom are often quite extraordinary, in particular when mating is traumatic. We here describe the exceptional traumatic mating behaviour of the currently undescribed sea slug, Siphopteron sp. 1. Similar to four congeners, Siphopteron sp. 1 routinely exhibits traumatic secretion transfer through a stylet-like penis appendage. Contrary to previous descriptions, however, prostate secretions are injected centrally into the partner's forehead, representing, to our knowledge, the first-known instance of 'cephalo-traumatic secretion transfer'. We further provide a comparative quantification of within- and between-species variation in injection sites and derive a potential neurophysiological function of prostate secretions that are injected close to, or into, the central nervous system.