

Questions and Answers from Dr. Janet Leonard, following the Fantastic World of the Banana Slug Webinar

Do the slugs in Alaska have any defense against freezing, especially in the winter?

Slugs in Alaska and other cold winter locations probably survive by going down animal burrows to unfrozen soil. Banana slugs have been found at Donner Lake in the Sierras.

Is there somewhere online we can follow your work?

My papers are mostly posted on ResearchGate.

How often do they copulate? Is it at specific times of year or year-round?

At least here on the SF Peninsula, they can copulate any time of year but copulation seems to be more frequent from August to December.

Can two slugs have intercourse at the same time...one acting as male and female at the same time?

Yes, that happens in several species . Here is a pair of copulating *Ariolimax buttoni* in which each individual has a penis inserted into the other one's vagina.



Is the penis gnawing behavior related to the duration of the sexual activity? In other words, do they get stuck and run out of options for separation?

Aphallation only occurs after a fairly long time in copulation and the chewing takes about 45 minutes, sometimes longer. There does seem to be a strong connection since the victim of the chewing will often struggle. However, there is no evidence that the chewing serves to separate a pair that have become stuck. Although people have speculated that that is the case.

Are the tiny white critters on slugs parasites or is the slug simply their environment?

Like many slugs and snails, banana slugs may have mites on their bodies or in their mucus. They are thought to be parasitic.

Does self fertilization lead to a VERY limited gene pool?

Self-fertilization can lead to a high degree of homozygosity and we have found populations that seem to be very inbred.

How do they fair?

It is thought that populations that lack genetic diversity will be less able to adapt to a change in the environment and hence more likely to go extinct locally.

Any ideas why *A. columbianus* is the only species to have expanded their range so far North?

The distribution of *A. columbianus* and the reduced genetic diversity north of Vancouver BC, suggest rapid northern expansion after the end of the Ice Age.

Is banana slug slime used in other scientific fields (e.g. medicine)?

Not that I know of.

I saw a banana slug on Mt. San Bruno the other day. I'm curious to know how far will it travel and will it spend its entire life on that mountain.

Hard to say; if it was more or less in the middle of the mountain, it will probably spend its life on the mountain although I have seen baby slugs get caught in animal (cat) fur and then get removed by grooming and wind up on the sofa, so it seems possible that they could get transported longer distances by animals or birds. They do get out to the Channel Islands, the Farallons, Alcatraz, etc.

At the beginning, you mention that banana slugs are like other sedentary animals (like salamanders) that speciate with isolation. Have you found specific phylogeographic breaks that correspond to the phylogenetic differences? I live in NW Sonoma County where we have a distinct phylogenetic break in a number of different species (I've heard it referred to as the Sonoma Mendocino break).

I don't know about that break but Rancho del Oso is a Biogeographic break and the break between *A. columbianus* and *A. buttoni*. Seems to correspond to the North Eel River which is a biogeographic break for other taxa.

I live in Oregon, so the year-round weather is a big difference from Santa Cruz. Where do the banana slugs go when it is too dry, too hot, or frozen?

They probably go down animal burrows.