

Predators on the move: the dark unicorn snail shifts north



The Dark Unicorn Snail

(*Mexacanthina lugubris*)



Sea snail



What they eat?

Mussels (*Mytilus californianus*)

Barnacles (*Balanus/Cthamalus* species)



Where they live?

Baja California, Mexico to Laguna Beach, CA, USA

This snail – or *whelk* – is named for its dark coloration and spine, like a unicorn! The dark unicorn snail is a top predatory sea snail found in the rocky intertidal zones on the beaches of the west coast of North America. They eat California mussels and barnacles. How? The snails drill holes into the mussels using their spine to help pry open, inject chemicals that liquifies the mussel flesh, and then finally slurp it all up.



They're named after the spine on their shells that looks like a **unicorn** horn!

California, USA

Heisler Park
Laguna Beach, CA

Range limit:

Originally this whelk lived from Magdalena Bay, Baja California Sur to Baja California. Now, you can find them as far north as Heisler Park, Laguna Beach, CA¹!

— Historic
····· Expanded

Magdalena Bay
Baja California Sur

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Dark unicorn snails are the new kids on the block, but will they fit in?

As the climate changes, they're moving north and setting up camp. *What kind of effects will the dark unicorn snail have on their new homes and neighbors?*

Does the dark unicorn whelk play well with others?

The dark unicorn snail could affect the communities they move into by messing with the already existing dynamics and relationships. They may compete with native whelks for space and food. Our lab has researched some of their effects:



Dark unicorn present = lower growth in native whelks

When the dark unicorn lurks, native whelks (*Acanthinucella spirata*) **grow less**¹. Why? Potentially native whelks avoid the unicorn snail and forage less; less food = less growth!



Dark unicorn present = native whelks in lower tide heights

When the dark unicorn is around, we find *more* native whelks **at lower tide heights**¹. Why? Potentially to avoid competing over similar resources! Native whelks may shift further down the shore to prevent too much overlap of food and space.



Can unicorns beat the heat?

Dark unicorn > temperature tolerance than native whelks

Adult dark unicorn snails have **a higher tolerance to high temperatures** than two native whelks (*Acanthinucella spirata* & *Nucella* species)¹. That means they can take advantage of living higher in the intertidal zone where it is hotter and more stressful. Normally, other predators like sea stars tend to be constrained to lower tide heights at hotter beaches², but not these unicorns! As the globe continues to warm, a higher tolerance also gives these unicorns a better chance at survival.



A. spirata

With National Science Foundation support, the **Sorte lab** at UC Irvine have observations & experiments underway to better understand the effects of new species like the dark unicorn. #RangeShiftNSF

