



Fishin' for Facts: Hagfish™

Scientific name: Myxinidae (and *Eptatretidae)

There are 67 known species of hagfish within 1 (*or 2) families. (Some scientists feel it should be two families, others just one...the battle of hagfish taxonomy rages on behind the scenes...)

Size

Depending on the kind of hagfish they are 9.8 to 39 inches (25 to 100 cm) long. However, the giant hagfish reaches 4 feet (127 cm) and weighs 13.7 lb (6.2 kg). Newly hatched hagfish are a little more than 1.5 inches (4.5 cm) and look just like an adult.

Where are they found?

These deep-sea creatures are found all over the world in temperate (cooler) and cold temperate waters, though generally not in the very cold polar seas. Hagfish have been seen as deep as 16,405 ft (5000m).

What do they eat?

Well, what don't they eat? All hagfish species are important predators and scavengers dining on small invertebrates as well as dead and dying fish and other animals. In true hagfish fashion, it even eats with a distasteful flair. It eats prey from the inside out by burrowing into or entering a dead or

dying fish through the gills, mouth, or... uh other openings. It licks (scrapes) off the flesh and organs with its tooth-covered tongue. The hagfish leaves behind a sack skin, filled with bones. Yum!



Photo courtesy of T. Frank

What eats them?

Hagfish are a popular food time for sea lions, seals, dolphins, porpoises, octopus...and people. Hagfish can be 25 to 50% of some predator's diets.

Highlights

Hagfish aren't as attractive as their name implies. At a glance, they look like an eel. Take a closer look and you'll find a (generally) 2-foot long jawless, boneless, scaleless deep-sea creature that oozes slime. Buckets of slime. Hagfish are so disgusting, scientists quiver when they accidentally catch one. When asked to describe hagfish, one deep-sea scientist replied, "Bleeeeeccccccch!"

That's just the response the hagfish wants. Oozing from pores on its side, slime cocoons the hagfish inside a clever, if not disgusting, shield. As most deep sea scientists quickly discover, a 19 or



20 inch (50 cm) hagfish can fill an 2 gallon (8 liter) bucket with slime in a matter of minutes. Just as kids avoid the classmate with snot dripping from his nose, the gross glop repulses predators. The slime may make them slippery, giving the hagfish a chance to slip away. Predators that ignore the gooey armor can actually be smothered by it.

De-slime, de-slime....a hagfish can smother itself with its own slime. To squeegee off the slime, a hagfish ties itself in a knot. The knot rolls down the body pushing the slime off as it moves. (Just as you'd slide your hand down a washcloth to squeeze out the water.) That knot comes in handy in another way. A hagfish uses the knot to give it leverage to pull off a chunk of flesh from its dinner.



Other fantastic things about hagfish... Hagfish do not bleed when injured and those boo boos do not get infected. Scientists are investigating any possible scientific uses for hagfish and their slime. No, that doesn't mean grossing out their friends with practical jokes (though our slime activity would work for that!), some believe there may be medical uses for the slime.

Threats

It's hard to believe there's a mad dash to catch hagfish...but there was....is. Not only are they eaten by some cultures, they are the real "skin" in eelskin products -- boots, wallets, purses...etc. Guess marketing "hagfishskin boots" had limited appeal? Little is known about their populations, breeding...etc. which means scientists cannot determine how this fishery might affect hagfish populations.

Discover more about the fascinating hagfish, read Dr. Gene Helfman's interview... be ready to be awed, amazed... and grossed out!

Learn more about ocean animals at **WhaleTimes:** www.whaletimes.org

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Hagfish and Dr. Gene Helfman

Hagfish Day Expert Interviews

Hi everyone, Dr. Helfman & hagfish slime

I shared a few of your serious and silly questions with fish expert Dr. Gene S. Helfman. He was kind enough to take time away from writing his latest book about fishes to help us appreciate the hagfish and give us a few laughs.

Jake, the SeaDog

Why should hagfish have their own holiday? There are over 28,000 different kinds of fishes. Most people can only name a dozen or so. By making a fuss over hagfish, or goblin sharks, or lumpsuckers, we remind people that the biological world is much more complex and fascinating than we usually think. And that makes us appreciate and care about nature more.

Why is the hagfish special? People are always interested in the biggest, tallest, fastest, deepest, highest, or prettiest. Giant redwoods, blue whales, cheetahs, Superman... Hagfishes are SuperFish in their own right.

Let's settle this whole slime thing. People exaggerate about the buckets of slime, right? No, it's true. No other animal can produce as much slime as a hagfish. The slime serves many purposes.



Dr. Helfman and hagfish slime.

Is the hagfish ugly, misunderstood, or...something else? It's certainly not ugly to another hagfish. Can you imagine what we look like to them? Two big bulging eyes, square teeth, our mouth all wrong and horizontal, a bulb of a nose instead of several slender tentacles. And what's all that long, furry stuff on top of your head where nice smooth skin ought to be?



Why is a hagfish cooler than a great white shark? Hagfish are cooler than a great white because they can go many months without feeding, and hagfish can tie themselves in knots. White sharks can't do either.

How long have you been studying hagfish? I've been studying eel-like fishes for decades, so the hagfish was an obvious subject for me.



The first time I saw a close-up photo of a hagfish I threw up a little in my mouth...is that normal?

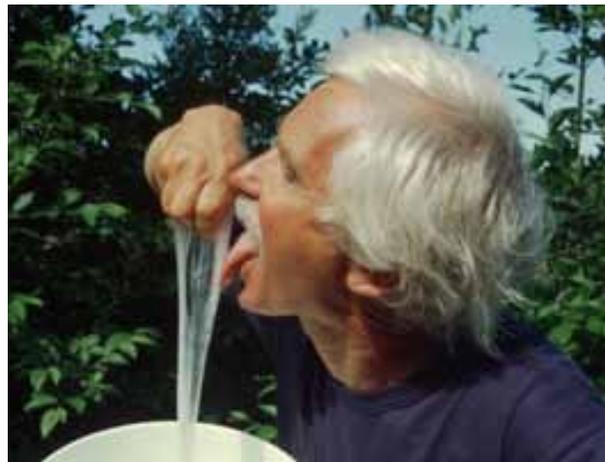
Funny. I have the same reaction to women wearing too much make-up.

Seriously, since everyone seems so repulsed by the hagfish should I worry about hagfish self-esteem...and populations?

Hagfish are an important scavenger in deep, cold waters around the world. They play the same role in marine ecosystems that vultures and the like play on land, turning carcasses into nutrients that can be used by plants. Without them, dead things would just lie on the bottom for months with all their valuable nutrients locked up and unavailable. We (including other sea creatures) would starve.

Did you really taste the slime? Why? What does it taste like? Will I see it on the food channel as the "new ketchup"? Did you need an extra-large breath mint after tasting it?

People had suggested that the slime tasted bad, which made hagfish undesirable to predators. Nobody (to my knowledge) had tested this idea. That's what scientists are supposed to do -- so I did. Actually, the slime had no taste at all, maybe a little salty, but that could have been the sea water the fish had been living in. Of



course, I have different taste buds that most hagfish predators, so there might have been something there I couldn't taste. (...About the mint...My wife said my breath was no worse than usual.)

Now that I think about the hagfish's diet...perhaps my planned burial at sea isn't such a noble plan, is it?

As a biologist, I like the idea of my carbon and nitrogen atoms going back into the food web after I die, so scavengers don't creep me out. The idea of being embalmed and put in a sealed casket in the ground is much scarier and certainly isn't very ecological. Maybe my atoms will wind up as part of a great white shark, or blue whale, or maybe just maybe, a hagfish.

Finally, and most importantly, how can I help hagfish? By being concerned about a healthy marine environment. Do all those things that we know are good for the environment, like recycling, avoid polluting, and using less energy, especially fossil fuels. Most importantly, encourage your friends and family to do the same. And if you see hagfish on the menu, order the halibut instead.

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