

# Welcome to the bone room

By Science Friday, adapted by Newsela staff on 02.25.20

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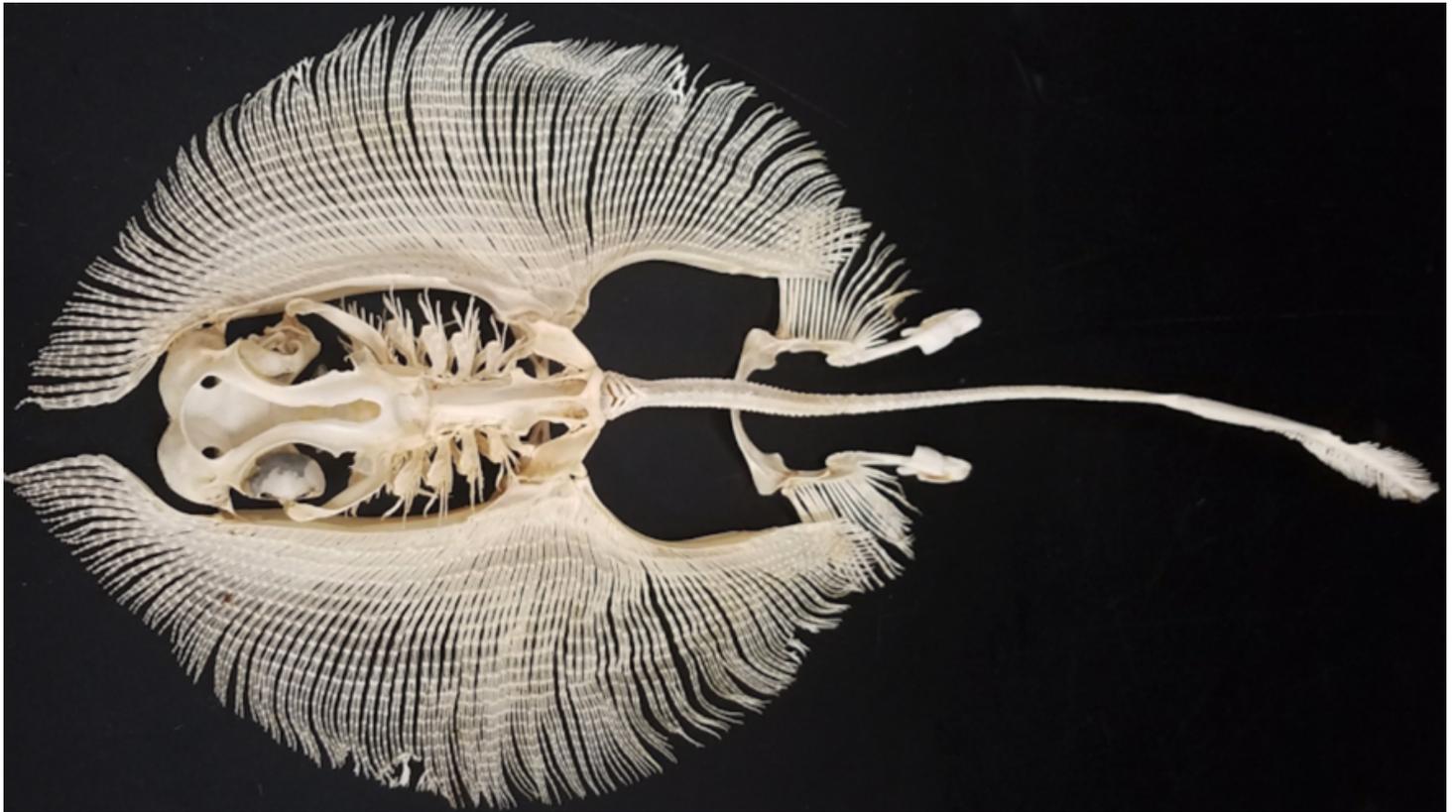


Image 1. Steve Huskey collects the remains of dead animals. He uses them to build a model of how the skeleton works. Skeleton articulated and photographed by Steve Huskey, Ph.D.

A yellow stingray is like a ghost, haunting the ocean waters of North Carolina down to Florida and the Bahamas and the Caribbean Sea. It might glide across the seafloor or vanish into the sand with its mottled tan skin. This is all so it can sneak up on nearby prey.

But its disappearing act also works on humans. A swimmer wading in shallow waters who accidentally steps on a hidden yellow stingray could get a nasty surprise. The creature defensively swings its venomous barb, or spine, on the top of its tail and stings the leg. It's a complex movement and one that researcher Steve Huskey goes all the way to the bone to understand.

Only by analyzing animal skeletons "could we see exactly what was going on in this tail to allow this spine to stab into stuff," says Huskey, a biologist and associate professor at Western Kentucky University in Bowling Green. Huskey studies morphology or the form and structure of animals and plants.

Huskey and his team found that not only does the tail get skinnier, but the cartilage bands that the creature uses for swimming have more gaps near the tip. This gives the yellow stingray's tail the

flexibility for a painful (but rarely lethal) stab.

"It's hard to fold steel," Huskey says. But if you put some perforations or tiny holes in it, you can bend the steel at that spot no problem, he says. That's exactly what the yellow stingray tail is like. "It's real stiff until those perforations are added, then it gets real flexible," he says. But the scientists couldn't see that until they got down to the cartilage.

### **An Unofficial Animal Undertaker**

The yellow stingray is just one of the many skeletons in Huskey's closet — literally. In fact, you might call him an animal undertaker.

Huskey collects and constructs the remains of dead animals to get a closer look at how certain skeletal structures allow movement. In the process, he prepares specimens for display in museums, aquariums and research labs. His lab has a few hundred skeletons of all types of animals at any given time. It also has thousands of photos of past specimens.

There is a lot of information that can be learned from the outer parts of the animal, Huskey says. But connective tissue such as bones and cartilage can tell deeper stories about what an animal can do. Huskey especially likes looking at animals that can use parts of their body as deadly weapons.

### **Special Deliveries**

Preparing a skeleton takes Huskey, on average, weeks to complete. First, he receives what he calls "dead goodies." These are samples often mailed in styrofoam containers from places like zoos, aquariums and pet stores.

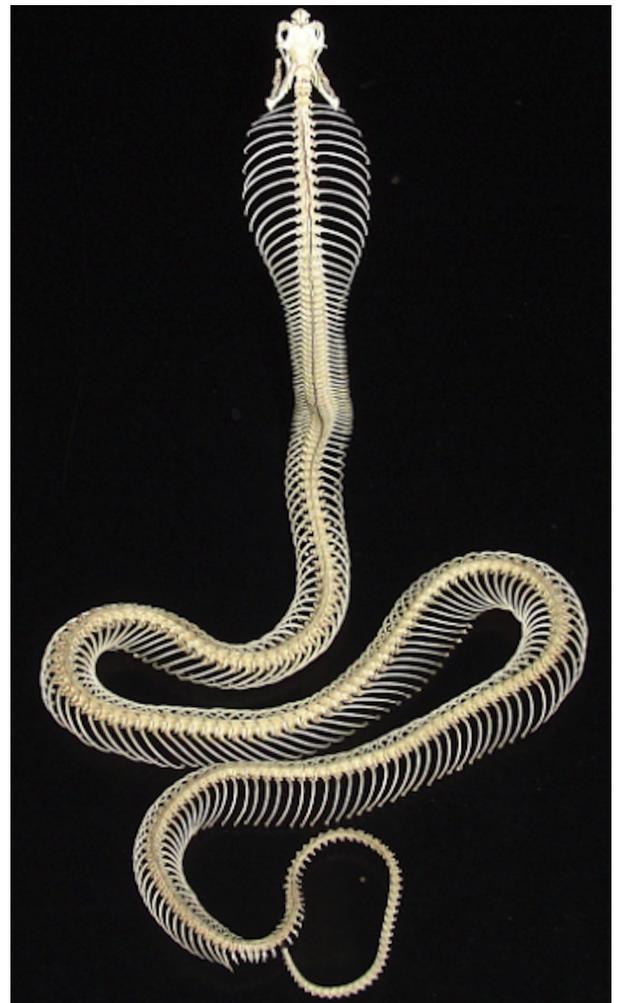
He then thaws, skins or descales, and guts the specimen. But the real credit goes to a species of tiny flesh-eating beetles.

### **Meet The Beetles**

It might sound odd to use flesh-eating beetles, but other processes that reduce animals to the bone often involve submerging the specimen in water or a solution of water and other dissolved substances. This can make it difficult for the structure to dry and stay together, Huskey explains.

"The beetles are the least destructive, and I would also argue the most efficient," Huskey says. "Nothing gets missed. If it's edible, they eat it."

Huskey removes some of the flesh beforehand so that the beetles all work at roughly the same rate and do not gnaw at the skeleton. Then he carefully positions the skeleton into a pose and places it



in a plastic box with hundreds of thousands of beetles, which eat the remaining meat. If the lab is quiet enough, you can even hear the sound of the thousands of tiny mouths at work.

"It literally sounds exactly like a giant bowl of Rice Krispies with milk poured on it," Huskey describes. "Just snap, crackle, pop."

When the beetles finish their meal, what is left is the bone.

### **Disgusting Yet Cool**

Though his animals are no longer breathing, Huskey brings some life back into the dead. Huskey arranges the skeletons as if they are about to bite, leap, crawl or fly. "If the bones are in a proper life-like position, it gives you a better appreciation for the mechanism involved," Huskey says.

Visiting Huskey's lab "can be breathtaking," he says. "Almost everybody walks in there and goes, 'this is freaking disgusting,' and within five minutes they're also saying, 'but this is the coolest thing I've ever seen.'"

## Quiz

- 1 Select the paragraph from the introduction [paragraphs 1-5] that explains how a yellow stingray's tail is able to bend.
- (A) A yellow stingray is like a ghost, haunting the ocean waters of North Carolina down to Florida and the Bahamas and the Caribbean Sea. It might glide across the seafloor or vanish into the sand with its mottled tan skin. This is all so it can sneak up on nearby prey.
  - (B) But its disappearing act also works on humans. A swimmer wading in shallow waters who accidentally steps on a hidden yellow stingray could get a nasty surprise. The creature defensively swings its venomous barb, or spine, on the top of its tail and stings the leg. It's a complex movement and one that researcher Steve Huskey goes all the way to the bone to understand.
  - (C) Only by analyzing animal skeletons "could we see exactly what was going on in this tail to allow this spine to stab into stuff," says Huskey, a biologist and associate professor at Western Kentucky University in Bowling Green. Huskey studies morphology or the form and structure of animals and plants.
  - (D) Huskey and his team found that not only does the tail get skinnier, but the cartilage bands that the creature uses for swimming have more gaps near the tip. This gives the yellow stingray's tail the flexibility for a painful (but rarely lethal) stab.
- 2 Which section from the article BEST explains how Huskey acquires his animal skeletons?
- (A) "An Unofficial Animal Undertaker"
  - (B) "Special Deliveries"
  - (C) "Meet The Beetles"
  - (D) "Disgusting Yet Cool"
- 3 According to the article, why does Huskey put the skeletons he prepares in lifelike positions?
- (A) to help viewers understand how the skeletons worked when the animal was alive
  - (B) to help viewers get over their fear and disgust about looking at the bones of dead animals
  - (C) to make something that could be simple and boring more interesting to look at
  - (D) to make the animals look as though they're interacting with one another in the exhibits
- 4 Which of the following MOST influenced Huskey's decision to use flesh-eating beetles to clean his skeletons?
- (A) Beetles do a good job eating all of the meat and none of the bone.
  - (B) Beetles are less expensive than more effective chemical cleaners.
  - (C) Beetles make a sound while they're eating that he thinks is funny.
  - (D) Beetles are his favorite animal and he wants a reason to have them in the lab.

## Answer Key

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