Putting new face on ferocious saber-tooth cats

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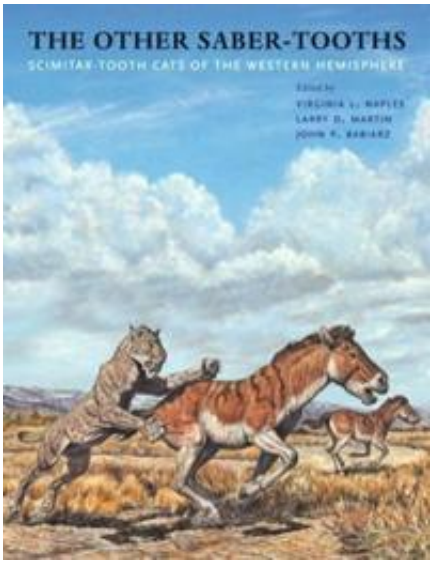

"The Other Saber-tooths" is richly illustrated and features the latest information on scimitar-tooth cats. Credit: Johns Hopkins University Press

It's safe to say Northern Illinois University Biological Sciences Professor Virginia Naples has a fascination with cats. She keeps two tabbies at her Hampshire, Ill. home. She also has focused her research on cats that were anything but cute and cuddly -- the prehistoric saber-tooths.

Naples and two colleagues -- Larry Martin of the University of Kansas and fossil hunter John Babiarz -- are editors of a new book on saber-tooth cats titled: "The Other Saber-tooths: Scimitar-tooth Cats of the

Western Hemisphere" (Johns Hopkins University Press).

The book, richly illustrated and featuring the latest information on scimitar-tooth cats, was based on nearly 10 years of research. In addition to the writings and research of the three editors, the book also includes contributions from other noted paleontologists.

"The most significant book ever produced on saber-tooth cats was published all the way back in 1932," Naples says. "Our book brings readers up to speed on new research and discoveries. Additionally, it's the first comprehensive volume ever published on the scimitar-tooth cats."

Paleontologists generally have identified two kinds of extinct North American and South American saber-tooth: dirk-tooth cats and scimitar-tooth cats. Naples' book introduces a third type, the Cookie-Cutter Cat, exemplified by the new cat described for the first time here, Xenosmilus hodsonae.

The better known dirk-tooth cat, Smilodon, roamed the Rancho La Brea tar seeps in California. In fact, hundreds were caught in the tar pits, and many of their complete skeletons have been recovered. The dirk-tooth cat had elongated, finely serrated canines and a short-legged, muscular body resembling that of a bear. Because of its heavy build, the cat could not run very fast for more than a short distance and probably ambushed its prey.

The scimitar-tooth cats -- many species of which have been found in North America, Europe and Asia -- were generally pursuit predators. With a body like a cheetah and shorter and more coarsely serrated canines than its California cousin, the scimitar-tooth cat relied on its speed to catch prey, including baby mammoths weighing as much as a ton.

In "The Other Saber-tooths," Naples and her co-editors reconstruct what scimitar-tooth cats might have looked like, discuss how the animals captured and killed prey and describe how the ferocious felines interacted with non-prey animals. Highly detailed descriptions reveal the biology of the cats, explain how they originated, and set them in an evolutionary context.

"While we don't know for sure what a saber-tooth cat would have looked like, I have done comparisons of the skull morphology with living species of cats and also have conducted reconstructions of the skull and facial muscles," Naples says. "We've worked with professional illustrators as well, and our saber-tooth illustrations differ from the way the cat has been presented in past."

Studies by Naples and her colleagues indicate that, in comparison with the profile of a modern house cat, the nose of the saber tooth was pulled back -- more of a Roman nose than the big square snout of a lion," Naples says.

The saber tooth also needed to open its jaws wide in order to take in food.

"It had to have lips that could stretch to allow the jaws to open wide, so the lips must have been bigger and looser than modern cats. It probably had jowls like a St. Bernard -- and probably drooled like one, too," Naples says.

She and her colleagues also describe a relatively new subset of scimitar-tooth cat, which they've dubbed the Cookie-Cutter Cat," for its ability to chomp a large, clean chunk of flesh from its prey.

Its fossils were recovered in the early 1980s from a North Central Florida gravel pit. Amateur collectors thought they had the skull of

scimitar-tooth cat and the skeleton of a dirk-tooth saber-tooth. Only in the late 1990s, when Naples, Martin and Babiarz began to study the fossils, did it become apparent they represented a paleontological prize.

"What they really had was one unique specimen," Naples says. "We knew it was different than the other animals."

The Cookie-Cutter Cat was a cross between the two previously known saber-tooth varieties and may have been the most ferocious. Its sabers were similar in size to the scimitar-tooth cats. But the cat's body was even more muscular than the California dirk-tooth, and the Cookie-Cutter possessed a wicked set of serrated biting teeth, including curved canines measuring 3 ½ inches.

"It had a whole mouthful of steak knives," Naples says.

The NIU biologist says this particular type of saber-tooth would likely bite its prey repeatedly until its victim went into shock from loss of blood.

Provided by Northern Illinois University

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