

Kids' Korner

Look-alike lobsters span 90 million years

WASHINGTON — Sometimes you don't have to get your feet wet to look for lobsters. Instead, you put on cowboy boots and head inland to cattle and sheep ranches in the northern Black Hills.

Lobsters in South Dakota? There are hundreds lying out there on the open range—bits of tails, legs, and bodies hardened into clay-like nuggets barely distinguishable from the dry, cracked earth.

They're 90-million-year-old fossilized remains from the time when South Dakota was a sea bed, when the ancient Gulf of Mexico reached north into Canada. It's a different version of "surf and turf."

These lobsters aren't edible, of course. But other members of their genus, *Linuparus*, are still crawling about the oceans today, though only in waters thousands of miles away, in the South China Sea and the Indian and Pacific oceans, off Africa and Australia.

FROM TIME OF DINOSAURS

"*Linuparus* is a rare living fossil. It was around with the dinosaurs and it's practically unchanged throughout a tremendous span of time," says paleontologist Gale A. Bishop, who has spent two summers on the South Dakota range picking up the black fossilized pieces that ranchers call "spider rocks."

Linuparus lobsters are not the famous big-clawed American lobsters found off the New England coast. They have no claws and are harvested primarily for their tail meat. They belong to the family popularly known as spiny or rock lobsters, which inhabit tropical

and warm temperate waters.

"It's incredible to be able to still see such primitive lobsters alive today and possibly have the chance to study the biology of something that lived millions of years ago, to see how they eat, mate, and live," says Bishop.

Why did *Linuparus* lobsters, like horseshoe crabs, for example, survive so long unchanged, and why are they found today only in the South China Sea and Indo-Pacific region? No one yet has the answers.

Bishop believes in starting in the beginning—when the lobsters first crawled along the sea bottom. They are known to have existed in both North American and European waters from the Early Cretaceous Period (about 130 million years ago) to the Early Eocene, about 50 million years ago.

In western South Dakota, Bishop has discovered a "lobster zone" along a narrow 54-mile-long strip of land. To collect the thousands of 90-million-year-old fragments, he and field assistant Brian Meyer covered at least five miles a day on foot.

PIECES IN A PUZZLE

A professor of geology at Georgia Southern College in Statesboro, Bishop is gluing together the pieces of these 3-D jigsaw puzzles in his campus lab. A single foot-long lobster may have broken into 30 pieces or more. He has about 400 at least partially complete lobsters from South Dakota.

Fossilized *Linuparus* specimens also have been found near Dallas, Texas, in northern Mississippi, and along the Chesapeake and

Delaware Canal. All of these areas were under water when the North American landmass was split in two by the western interior seaway.

The ancient lobsters in North America lived in shallow waters in the oozy, soft sea bottom, probably on a diet of shellfish.

Today *Linuparus* live in a similar muddy environment, but in much deeper waters at depths of 250 to 1,000 feet, says zoologist Austin B. Williams of the National Marine Fisheries Service. Williams is collaborating with Bishop in comparing the fossils with the only three *Linuparus* species still known to exist. There are 27 extinct species.

Because of the depths at which they now live, today's *Linuparus* lobsters are more difficult to reach than their 90-million-year-old ancestors on dry land. A very small amount get caught with the 400 million pounds of lobsters that make up the world's average annual catch, says Williams. They show up primarily among frozen lobster tails from Japan.

To observe their behavior would require the use of a camera-equipped submersible. Bishop and Williams theorize that the lobsters still look and live so much like their ancestors because their habitat, though deeper, probably has not changed, and their food resources have remained stable.

Whether the lobsters migrated to the Indo-Pacific from North America or were always there is not known.

At this point, Bishop has seen more fossilized lobsters than live *Linuparus*. And he has yet to taste a morsel of sweet *Linuparus*.



Ninety million years separate three fossil *Linuparus* lobsters from their modern relative, the one with antennae. In comparing them, paleontologist Gale Bishop, left, and zoologist Austin Williams discovered that time and distance have barely changed them. They were found thousands of miles apart.

COLOR THIS!

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|-----------|---------------|
| 1. BLACK | 6. ORANGE |
| 2. RED | 7. GREEN |
| 3. YELLOW | 8. PEACH |
| 4. BLUE | 9. LT. BLUE |
| 5. BROWN | 10. LT. GREEN |

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