

Unearthing a fossil haven

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Seventy feet below Wilshire Boulevard, catercorner from the Los Angeles County Museum of Art's street-lamp installation, fresh air roaring from giant ventilation pipes dulled the sickly sweet smell of petroleum.

Amid the clatter of jackhammers and the whine of a mini-excavator, paleontologist Kim Scott scouted the tarry muck for relics from a long-buried beach. She had plenty of choices.

Major construction on the highly anticipated Westside subway extension won't begin until next year, but an exploratory shaft dug at the corner of Ogden Drive to assess soil conditions for future stations and tunnels has burped up a bonanza of prehistoric swag. Officials had anticipated encountering a substantial cache: The dig is near the La Brea Tar Pits and features a sandy matrix with naturally occurring asphalt - a fossil haven.

Paleontologists have recovered mollusks, asphalt-saturated sand dollars, pieces of driftwood and Monterey cypress cones. For Scott, the most exciting finds have been a rock embedded with what appears to be part of a sea lion's mouth (perhaps 2 million years old) and a non-fossilized 10-foot limb from a digger pine tree that would look right at home today in Central California woodlands.

"Here on the Miracle Mile is where the best record of life from the last great ice age in the world is found," said Scott, field and laboratory director with Cogstone Resource Management, based in Orange.

In the shaft, she added, "you're walking along an ice age shoreline."

The former Rancho La Brea area of Hancock Park and environs indeed features one of the world's premier paleontological troves. Over the millennia, petroleum from once massive underground oil fields oozed to the surface, forming bogs that trapped and killed unwary animals and then preserved their skeletons.

Evidence abounds at the tar pits and the George C. Page Museum, just east of the exploratory shaft, where in the heart of urban Los Angeles scientists have uncovered remnants of dire wolves, saber-toothed cats, ground sloths and other species.

The swimming-pool-size shaft, 18 feet wide by 38 feet long, is yielding evidence from its depths of a cooler, wetter Pleistocene climate of 100,000 to 330,000 years ago, when Pacific Ocean waves lapped over what is now the bustling Miracle Mile. Materials from the upper 40 feet of the shaft range from modern era to 50,000 years old. Below that is "near shore" material from 100,000 to at least 330,000 years old, Scott said.

The Los Angeles County Metropolitan Transportation Authority is working with Cogstone and Page Museum researchers to identify and preserve the representative sampling.

John M. Harris, the Page's chief curator, said the area, though rich in fossils, is nonetheless a finite source. "It's hit or miss," he said. "Anything still in the ground is very important."

Although the area is protected, LACMA years ago was granted dispensation to build an underground garage to replace an old May Co. parking structure. In 2009, the Page announced the discovery three years earlier of the largest known cache of fossils from the last [ice age](#).

In one spectacular instance, a worker scraped his bulldozer across what turned out to be a nearly intact skeleton of a Columbian mammoth with 10-foot-long tusks, which researchers named Zed.

Scientists reveled in the find, given that previous discoveries in the tar pits had included only bits and pieces of mammoths. So that construction could resume as quickly as possible, paleontologists pioneered a process similar to that used to move large living trees. After identifying the edges of each of 16 deposits, they dug around and underneath them, wrapped them in heavy plastic, built wooden crates around them and lifted them out with a heavy crane.

Similar discoveries are expected once excavation begins for the Fairfax station, and scientists plan to use the same extraction method.

At this stage in the exploratory shaft, which will be twice as deep as any other previous excavation in the area, the marine finds are quite portable - geoducks, clams, snails, mussels, tusk shells. They're collected in takeout-food containers made of plastic (so that the asphalt does not stick). As for the rock that possibly contains a sea lion's tooth root, Scott explained that it probably washed out of an old formation and floated down a stream to the beach.

"Even though we're finding fossils older than what's found at La Brea, none of the identified fossils found to date are extinct," Scott said. "We can still find all the plants and animals in California."

Asphalt from an earlier descent already coated Scott's jeans, work boots and right forearm when she headed back down the steep metal steps into the hole one recent afternoon. The uneven surface at the base made it tough to balance. She stepped back with one foot, which sank immediately into ankle-deep water. Above the fresh muck, wood and shotcrete had been installed to hold back the soil.

Two miners used jackhammers to dislodge ancient layers of sticky sand mixed with silt, gravel and shells. The operator of the mini-excavator shoveled the sludge to one side of the shaft, where it would later be piled into a bin and hoisted to the surface to be loaded into a truck headed for an Azusa landfill.

Bethany Ader, another Cogstone paleontologist, scrambled up and down a slippery slope of tar sand carrying small relics. The two scientists have routinely worked 15-hour days.

Work on the shaft began last April, and workers expect to hit 75 feet by the end of March. They will then excavate an additional 2 feet to pour a concrete slab floor, said Mark Bray, resident engineer. A water pump in the floor will collect rainwater and any groundwater that enters from "weep holes" built into the shotcrete.

Once the shaft is completed, it will be covered by street grating. Over the next six months, engineers will enter the shaft periodically to check for water and assess how the soils will react during the subway tunneling and station construction.

Eventually, workers will spend about two months removing equipment and backfilling the shaft with a mixture of cement and sand. At some point years hence, commuters will walk through the subterranean station, unaware that they're surrounded by the remnants of a distant sea.

"Here in Mid-Wilshire," said Dave Sotero, a Metro spokesman, "L.A.'s prehistoric past is meeting its subway future."

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