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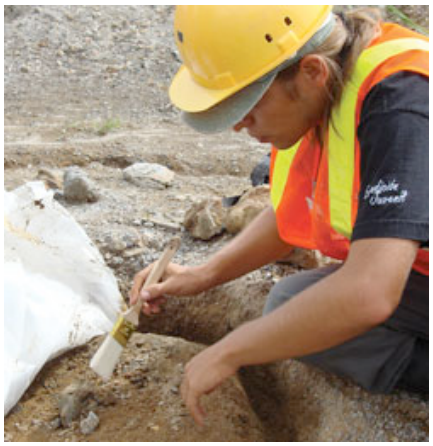
By Andrea Gawrylewski

On the hills of the Culebra Cut, a few miles north of the Miraflores Locks, bulldozers and dump trucks are carting masses of soil away from the edge of the canal. Each day geologist and paleontologist Carlos Jaramillo and a team of researchers from his lab at the Smithsonian Tropical Research Institute (STRI) pack in a Toyota truck and head to the excavation sites, searching among the dirt and sediment for their treasures: fossils. Even as the expansion of the Panama Canal causes unease for scientists who are concerned with ecology, for others, like Jaramillo and his colleagues, it's a bonanza.

Opening Pandora's Locks
Slideshow: Expanding the world's most famous canal
The Plan to Expand

When the isthmus between North and South America formed an estimated 3.5 million years ago, the resulting land bridge connected two continents of plant and animal species and triggered one of the largest migrations of organisms in earth's history. Because ancient rocks in tropical regions are so completely covered by sediment and vegetation, however, the fossil record of this migration is woefully incomplete - and so are the details. For example, while many species fossils can be found on both the North and South American continents, paleontologists are still unsure of where they first originated. Garnering new fossil evidence from the isthmus of Panama will help researchers such as Jaramillo put a more exact timeline together of what happened when, and who moved where. "This is a



Javier Luque brushes dirt from the top portion of crocodile vertebra on the excavation site at Culebra

unique, once in a lifetime opportunity," Jaramillo says. "After this expansion we won't get this chance for another 100 years."

Cut, only a few miles from the Miraflores locks.

In hard hats, fluorescent vests, and work boots, two of Jaramillo's researchers walk down the excavated tiers of earth for about 15 minutes before they reach the lowermost level closest to the canal. They navigate the mud and uncover one by one small areas of dirt that have been flagged and covered with plastic tarp. A week before, someone spotted the bones of what they have identified as crocodile vertebrae. Javier Luque, an intern in Jaramillo's lab, leans over the bone sticking up from the soil, a sample the size of his palm. He says it will take them probably another week to uncover the rest of the spine, and they don't know how intact it will be.

The abundance of fossils in just a 100-meter stretch of exposed soil is immense; in one layer of sediment and within about one square meter plot they found roughly 80 crab carapaces, representing eight species. The day before, they found what appears to be a megaleaf thought to be at least 20 million years old. The researchers will be able to date the rock samples they collect by the foraminifera embedded in them; the foraminifera have a well-defined evolutionary tree, so they will act as ticks on the geologic timeline of the region.

Other bones abound. Jaramillo's team has found dolphin ribs, rhinoceros bones, and carnivorous jaws. But as trucks roar on the levels above, and rivulets of water running down the excavation site make walking a challenge, it's hard to imagine being able to spot the remnants of ancient life. "It's very hard," says Luque. "But after a while you get an eye for it."

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