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Colombian gold rush/If country can limit its internal violence, the precious metal could make for rich pickings

Paul Harris, Chronicle Foreign Service

(02-06) 04:00 PST Segovia, Colombia -- Sweat pours off the back of Luis Villegas as he shovels mineral-rich ore into a sluice. Next to him, another man pans for gold and a third pours mercury from a yogurt carton into his pan to separate the gold from the ore.

Behind them, three wooden poles, thick as telegraph posts, that form part of an old-fashioned stamp mill perform their ceaseless dance, pounding the gray, gold-bearing rock into a fine grit.

It looks like a scene from California's Gold Rush. In fact, it's modern day Colombia, where -- with the exception of the yogurt carton -- small-scale miners still use virtually the same technology that brought riches to San Francisco more than 150 years ago.

"What I find astonishing is Colombia's gold mines produce over 1 million ounces of gold per year and yet it has no major gold producer," says Peter Bolt, director of Cambridge Mineral Resources, a London company looking to bring modern mining techniques to the country.

Colombia may be on the verge of its own gold rush, mining experts say.

Colombia's gold reserves haven't been tapped in part because of 50 years of armed conflict involving the army, left-wing guerrillas, right-wing death squads and drug cartels, a lethal mix that made mining dangerous. But as security measures put in place by President Alvaro Uribe prove successful in quelling violence, the clamor for the precious yellow metal is proving irresistible.

As much as 40 percent of Colombia has not even been geologically mapped. Industry experts think there are rich pickings to be had.

"A steady flow of mining companies into the country has begun, and the potential of Colombia is there for all to see (with small-scale) gold mines spread across the length and breadth of the country," Bolt said.

The three belts of Andean cordillera that straddle Colombia have yet to feel the drill bits of modern exploration equipment. Miners are convinced "that there exist large undiscovered reserves," says Archak Bedrossian, an international gold consultant and trader.

Peru, Colombia's neighbor to the south, produces about 210 tons of gold per year. Some believe Colombia could surpass that.

"There is more gold in Colombia than there ever was in Peru," said Ian Park, president of Compañía Minera de Caldas, a Canadian-owned mining company.

Of the 23 tons of gold that Colombia mines each year, 15 are produced in the west-central state of Antioquia. The Segovia and Frontino mining districts are there. Ten tons is panned by small-scale miners who produce less than 1 to 2 ounces of gold per day using the antiquated methods

brought to the region by fortune-seeking Cornish miners from England in the 19th century, just like the Cornishmen who flocked to California during the Gold Rush.

Antioquia's picturesque green hills, on which cattle graze between plots of sugarcane, have been the heart of Colombia's gold production for centuries. Many of the indigenous gold ornaments and objects that hypnotized Spanish conquistadors hundreds of years ago came from this region.

Asomineros, a mining trade group, estimates that there are 1,500 small-scale gold workings employing 200,000 miners in the state. Men can be seen standing thigh-deep in the creeks, shoveling gravel into sluices in the hope of finding gold flakes and nuggets.

"I have some luck, enough to get by," said Hernan Ortega, a sun-bronzed man in his 40s, as he took a break from hoisting shovels of rock from the fast moving stream.

In Marmato, in Caldas state to the south, the hills are riddled with adits, the tunnels supported by wooden beams that the miners excavate to follow gold veins.

The humid, dimly lit tunnels are small and hazardous to navigate. Miners push handcarts all day to haul out ore and waste rock. Temperatures reach 122 degrees Fahrenheit. With no power tools, almost everything is done by hand.

Industrial-scale miners seek a mother lode, a deposit that contains a gold-bearing vein sufficient to produce in commercial quantities for several years.

"The veins being exploited typically average 2 meters in width and contain 15 to 20 grams of gold per ton, with bonanza grades above 1,000 grams locally," said Colin Andrew, Cambridge Mineral's managing director. In laymen's terms, that means there's a lot of gold here.

Having spent more than \$45 million to date exploring its Angostura gold property near Bucaramanga, in Santander department, the Canadian company Greystar Resources has found a multitude of veins containing 10 million ounces of gold.

"We have identified over 120 veins in the deposit (including) 60 higher-grade shoots where the veins intersect," said Greystar Executive Vice President Frederick Felder.

Wherever there is gold production in Colombia there are ancient stamp mills nestled into the mountain, the mechanical dinosaurs that were first used more than 500 years ago and that linger into the 21st century. Antioquia alone has 500 of the stamp mills, similar to those first used in Renaissance Europe, Asomineros estimates.

The government hopes that an influx of foreign investment will create jobs, modernize mining techniques and make the industry more productive.

One of the biggest challenges is curbing deadly environmental practices

that are integral to Colombia's antiquated mining tradition. Authorities want to restrict use of toxic mercury and cyanide, substances used for ore processing that are now openly dumped into streams.

"Exploitation of Colombia's great gold potential has to be with modern technology that allows higher mineral recovery and better social and environmental conditions," said Carlos Uribe, director of Asomineros.

At a small mill near the Quintana mine where Cambridge Mineral is exploring, miners add mercury, a neurotoxin with highly toxic vapors, to the wok-size steel pan that is used to agglomerate gold particles, using their fingers to mix it into the grit.

"The people have problems with mercury, it stays in their bodies," said Antonio Castillo, mine manager at Quintana.

Once the grit has been panned away, the remaining liquid is poured into a piece of cloth and the mercury squeezed out through the fabric to leave a ball of gold-mercury amalgam. The miners perform the task without gloves or masks to protect them against the fumes that damage the lungs, kidneys and brain.

Much of the mercury ends up in local rivers, threatening a legacy not unlike that which California faced from its Gold Rush years. The U.S. Geological Survey estimates that 3 million pounds of mercury entered Sierra Nevada watersheds during the gold boom.

In Segovia, a threadbare mining town of 60,000 about 120 miles from Medellin, every shop has a sign in the window that says "we buy gold." In the central plaza stands a golden statue of a woman, Mother Earth, from whose belly a miner removes ore with a pick.

The arrival of foreign mining companies will see the picks gradually be replaced by power drills. Mother Earth has a lot more gold to give.

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