

# Peru fighting mining pollution with little green algae

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Peruvian biologist Enoc Jara is leading a team of scientists fortifying algae in order to combat water pollution

Scientists in Peru have removed small green algae from polluted lakes and rivers in a bid to strengthen them with nutrients and oxygen before

returning them to purify those water bodies from harmful mining waste.

Mining is the motor that drives Peru's economy but at a huge environmental cost, particularly around Lake Junin in the center-west of the country.

"Every two years these microalgae are given nutrients to strengthen them with the aim of absorbing the polluting minerals," Enoc Jara, head of the investigation team at the National University of San Marcos, told AFP.

The algae are reinforced with nitrogen, phosphorous and potassium in a Limba laboratory before being returned to the contaminated lakes and rivers.

"Right now we're working on the large-scale reproduction of the fortified microalgae," said Jara, who for the last decade has been studying the use of mushrooms, plants and enzymes to depollute soil and [water bodies](#).

Jara said the algae had proved their worth in the laboratory "in a tough battle" with the microorganisms that contaminated Lake Junin.

## **Gold the worst polluter**

Junin—or Chinchaycocha, to give it its Quechua name—lies 200 kilometers (124 miles) northeast of Lima at an altitude of 4,000 meters (4,374 yards) and is the largest lake entirely within Peru's borders.

At 530 square kilometers (205 square miles), it is the most polluted lake in Peru due to mineral residues.



Tiny green microalgae may not look like much but they could provide the solution to depolluting lakes and rivers contaminated with mining waste

Gold [mining](#), much of it illegal, is the worst polluter in a country which is the sixth-largest producer of the yellow metal in the world.

Other metals mined in Peru are zinc, iron and copper, which is Peru's largest export at 2.4 million tons (tonnes) in 2018.

After the first successful laboratory tests in Lima, the next step is to evaluate the algae's effectiveness in purifying Junin Lake.

The same thing will happen at the San Juan river that feeds the lake and

whose color has changed due to pollution.

"We've already had good laboratory results in the depollution of water from the lake. The microalgae absorbed the metals," said Jara.

Two of the lake's emblematic species are the Junin grebe, a flightless bird with striking red eyes found only at this lake, and a giant aquatic frog unique to [high altitudes](#) in the Peruvian Andes.

Both are in danger of extinction because of pollution.

The giant frog faces "threats ranging from mining pollution, sewage and hunting for consumption," Luis Castillo, an ecologist from the Grupo Rana (Frog Group) non-governmental organization, told AFP.

Alan Chamorro, from ECOAN, another NGO, said the Junin grebe is critically endangered.



Enoc Jara says his team of scientists need funding to win the fight against mining waste pollution using algae

"We've counted 350 birds," he said, adding that the species' numbers were recovering from just 50 in 2000, thanks to the efforts of specialists at ECOAN.

## **'Environmental emergency'**

To complete the final stage of the experiment—returning the algae to Lake Junin—the team needs financing.

"If we had support from the central government, local government or from the mining companies in the Pasco region that throw their waste into the rivers whose waters empty into the lake, we could depollute it in 10 years," said Jara.

Cerro de Pasco, one of the highest cities in the world at 4,350 meters, is the mining capital of Peru but it is in a state of "environmental emergency," according to the health ministry. In the middle of the city is a hole—almost two kilometers long, one kilometer wide, and 500 meters deep, created by the mining that pollutes Lake Junin.

Jara's team does get \$21,000 a year from the university, the oldest in the Americas, and it won some financing in a competition, "but we need more funds," he said.

While the team has been working only in the Andes, it has "identified plants that can combat soil damage from mining" in the Amazon region of Madre de Dios, the epicenter of illegal mining in Peru.

The same method could also be used to clean the waters of Lake Titicaca, the highest navigable [lake](#) in the world, and Peru's biggest, which it shares with Bolivia.

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