

Science discussion series: Small-scale mining provides a huge portion of the world’s minerals and metals, but has major effects on health and the environment. We are a team of scientists focused on finding solutions to these problems, let’s discuss!

ScienceModerator<sup>1</sup> and r/Science AMAs<sup>1</sup>

<sup>1</sup>Affiliation not available

April 17, 2023

### Abstract

Hello, Reddit! We are a team of conservationists and scientists here to discuss artisanal and small-scale mining, its surprising importance to some of our most beloved possessions, and its effects on biodiversity. Let’s discuss! Artisanal and small-scale mining (ASM)—the mining of metals and minerals by hand, often using tools as simple as a hammer and a pick—is an enormous part of our industrial supply chain. In fact, ASM is the main source of income for over 40 million people world wide, and is responsible for between 15–20% of all the world’s mineral and metal production. ASM produces huge percentages of the world’s gold, tin, and cobalt supplies, which, as you may know, are all absolutely crucial ingredients to one of our most important possessions- our smart phones. As things stand, there are some serious drawbacks to artisanal and small scale mining. Notably, ASM requires a lot of water to clean the mined materials before they’re ready for sale, and in some cases, numerous poisonous solvents must be used as well. What results is contaminated water, decreased biodiversity, and birth defects—and these are just some of the problems. For these reasons, we’ve been extremely interested lately in potential technological, logistical, and political solutions that could improve the lives of ASM workers and protect their environments. We’re here today with some ideas of our own, but certainly not all the answers. We hope that we can have a lively discussion about artisanal mining, really dig into the issues surrounding it, and maybe even unearth some possible solutions. Today’s discussion is in collaboration with Conservation X Labs, a D.C. based conservation non-profit that acts as an incubator to help innovators and organizations bring great conservation ideas to life and get them out into the world where they can make a difference for the people who need them. Conservation X Labs is putting up \$750,000 dollars in prize money in hopes of finding solutions to improve lives of ASM workers and protect their environments. Our discussion-panel guests today are: Alex Dehgan (u/Alex\_Dehgan): I am CEO and co-founder of Conservation X Labs. I recently served as the Chief Scientist at USAID, with rank of Assistant Administrator, and co-founded the Global Development Lab. I am also the Chanler Innovator at Duke University and served as Duke’s inaugural David Rubenstein Fellow. Prior to USAID, I worked in multiple positions within the Office of the Secretary, and the Bureau of Near Eastern Affairs, at the Dept. of State, where I used science and conservation as a diplomatic tool for engagement with countries in the Islamic world, including Iran. I also hold a J.D. from the University of California, Hastings, and a B.S. from Duke University, and am the author of *The Snow Leopard Project and Other Adventures in Warzone Conservation*. Luis E. Fernandez (u/Luis\_E.Fernandez): I am the Executive Director of the Amazon Scientific Innovation Center (CINCIA) and an Assistant Professor of Research in the Department of Biology at Wake Forest University. I am a tropical ecologist, as well as an expert in the dynamics and impact of environmental mercury in areas where artisanal mining is common. I have held positions at the Carnegie Institution for Science, Stanford University, the U.S. Department of Energy, and the U.S. Environmental Agency. Nicole M. Smith (u/Nicole.M.Smith): I am a cultural anthropologist with research interests in artisanal and small-scale mining; sustainability and social responsibility, as well as engineering education. I am an Assistant Professor in the Mining Engineering Department at the the Colorado School of Mines. I am currently the PI for a U.S. Department of State-funded project addressing mercury use among Peruvian artisanal and

small-scale gold miners, as well as the Co-PI on a National Science Foundation-funded project that applies an interdisciplinary, community-centered approach to understanding ASM systems in Colombia and Peru. I am also a research fellow at the Centre for Social Responsibility in Mining at the Sustainable Minerals Institute at the University of Queensland and a scholarly affiliate with the Gemstone and Sustainable Development Knowledge Hub. James McQuilken (u/James\_McQuilken): I am a Program Officer in Pact's Mines to Markets program, and the Project Manager and Technical Lead on DELVE, a global data initiative between the World Bank and Pact to develop an online platform on artisanal and small-scale mining (ASM). Based in Kigali, Rwanda, I am also the ASM specialist on Sustainable Development of Mining in Rwanda (SDMR). Based on over a year of fieldwork in Ghana, my PhD thesis maps small-scale mining networks of gold and diamond production and develops policy recommendations to improve mineral certification and formalization initiatives in the region. We'll be around ~1pm EST to answer your questions and discuss artisanal and small-scale mining with you!

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DATE RECEIVED:  
August 30, 2019

DOI:  
10.15200/winn.156716.69447

ARCHIVED:  
August 30, 2019

CITATION:

ScienceModerator , r/Science ,  
Science discussion series:  
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huge portion of the world's  
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let's discuss!, *The Winnower*  
6:e156716.69447 , 2019 , DOI:  
[10.15200/winn.156716.69447](#)

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The AMA is still in progress

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