

Contrary to popular belief, coca not the driving force of deforestation

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Liliana M. Dávalos, Professor of Ecology and Evolution. Credit: Stony Brook University

Most of the world's coca—the plant source of cocaine—grows in the Amazon forests of the Andean countries of Colombia, Peru and Bolivia,

where many think this illicit crop causes deforestation. However, a team led by Stony Brook University Professor of Ecology and Evolution Liliana M. Dávalos, shows most deforestation isn't caused by coca cultivation. In fact, the study, published in *Bioscience*, found that deforestation and coca both share a common origin in the implementation of an infrastructure plan from the 1960s to open the Amazon frontier through road construction and development projects.

For over 40 years, the War on Drugs has fought coca by uprooting plants, providing farmers with incentives to grow other crops, and even spraying herbicide from airplanes over Colombian fields. But despite massive international and domestic investment, and economic and security improvements in the region, none of the countries has been able to completely eliminate illegal coca cultivation. Neither forcibly uprooting the plants, nor transient support for growing legal crops has worked as expected.

The starting point of Professor Dávalos' research was a seemingly straightforward question: Why do deforestation and coca overlap in the western Amazon? Professor Dávalos explains: "In a [previous study](#), we found the location of coca plots helped explain deforestation, but only in the Amazon. This seemed odd, as coca crops were generally thought to cause deforestation because they were so attractive. For example, coca might be so profitable people would move to grow it."

However, this was not the case. When the researchers looked at [deforestation analyses](#) that included social factors, such as poverty or armed conflict, coca seemed to have no influence on deforestation rates.

These puzzling results led them to explore the history of the Andean countries to pinpoint when and where coca cultivation for the global illegal drug market started, and how it related to the growing pace of deforestation in the late 20th-century. The maps, published in the 1970s,

looked like coca cultivation and deforestation maps today but they were maps of locations where governments had implemented their infrastructure projects in the 1960s.

Both coca and deforestation share a common origin linked to development projects, so what to make of the often-reported role of coca cultivation as a cause of forest loss in the Amazon? By examining every publication over the last decade to measure deforestation in the Amazon frontier from coca crops and from other causes, the researchers found two patterns. First, legal crops and pastures directly cause most deforestation, not coca cultivation. Second, coca cultivation was not associated with higher [deforestation rates](#) in almost every study. The single exception was a study that found coca cultivation was linked to more deforestation when armed groups forced farmers from their land.

"Deforestation and coca cluster together in the Amazon frontier, but frontier dynamics is not a consequence of coca cultivation by itself. Instead, the dynamics sprung from efforts to develop western Amazonia," emphasized Professor Dávalos.

These analyses are particularly relevant today, as nations and international agencies commit to new development projects, this time aiming to eliminate coca cultivation from the western Amazon.

"Explaining where, how, and why farmers continue to plant coca requires an integrated understanding of the history, geography, and environment of the region," says Paul Gootenberg, SUNY Distinguished Professor of History and Sociology at Stony Brook University, and a leading historian of cocaine who was not involved in the study. He is directing a parallel study based on archival case studies in the coca valleys of Colombia, Peru, and Bolivia commented on the crucial timing of this study: "Dávalos and her team have applied an innovative set of methods which have produced powerful and lucid findings for historians

and drug."

The central finding of the study is finding a statistical relationship between government infrastructure and development projects and coca cultivation today. This points to a history of development plans that failed to deliver: "The grand plan since the early 1960s was to build a highway from Bolivia in the south to Venezuela in the north, and encourage migration and agricultural expansion to open up the Amazon. This plan also needed new or improved connector roads between Andean cities and the lowlands," highlighted Dávalos. The development plans, with their promise of securing land and food for millions of Andean farmers, had the financial support of both national governments and international development agencies and organizations.

However, challenging conditions in the Amazon thwarted the plans from the beginning. As investment dwindled and commitments to the farmers who had moved to the Amazon slopes and lowlands faltered through the 1970s and 1980s, a new form of agriculture emerged in response to international demand. Gootenberg explains: "cocaine consumption just exploded during the 1970s, it is unsurprising to find farmers adopting coca as a cash crop around that time, as other options diminished."

Once the sites with historical development projects had been identified, the team tested the relationship between location of coca cultivation in 2014 and 20th-century the development projects. "The results are compelling. In the Amazon, coca cultivation increases sharply close to the sites of those development projects. These projects began more than 30 years but their landscape footprint endures in the form of coca cultivation and [deforestation](#)," added Dávalos.

The authors add, "We hope our analyses help us learn from the past, and avoid repeating mistakes. Development projects must work with Amazonian farmers to set explicit forest conservation goals and plan for

decades, and not just years of investment."

Provided by Stony Brook University

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