

CONSERVATION

Drug Policy as Conservation Policy: Narco-Deforestation

Kendra McSweeney,^{1*} Erik A. Nielsen,² Matthew J. Taylor,³ David J. Wrathall,⁴ Zoe Pearson,¹ Ophelia Wang,² Spencer T. Plumb⁵

The watershed 2013 report, *The Drug Problem in the Americas* (1), highlights a shift toward multilateral support for hemispheric drug policy reform. This report by the Organization of American States (OAS) reviews failures of the U.S.-led prohibitionist “war on drugs” and urges states to reconsider orthodox “supply-side” strategies (including interdiction and drug crop eradication), and to focus more on demand-side policy experimentation. In Central America, a key zone of drug transit that is being ripped apart by narco-fueled violence and corruption (2, 3), the push for reform signals hope that the conditions fueling drug traffickers’ profits and corrosive political influence may eventually be dismantled (4).

Seemingly far from the world of conservation science, drug policy reform could also alleviate pressures on Central America’s rapidly disappearing forests. Mounting evidence suggests that the trafficking of drugs (principally cocaine) has become a crucial—and overlooked—accelerant of forest loss in the isthmus. A better understanding of this process is essential for anticipating how it might be mitigated by specific drug policy reforms.

Overlapping Traffic and Deforestation

Since 2000, deforestation rates in Honduras, Guatemala, and Nicaragua have been among the highest in Latin America and the world; after 2005, the rates increased (5). Forest loss is concentrated in the Caribbean lowlands of the Mesoamerican Biological Corridor, a globally important region



Clandestine landing strip in a protected area in eastern Honduras. This is used and maintained exclusively for drug planes from South America (23 May 2011).

indigenous agricultural plots (<2 ha) (10) points to the presence of unusually well-capitalized agents on the ground. Similarly, in Guatemala’s Petén, an unprecedented number of primary cocaine flows into the region coincided with a period of extensive forest loss (2006–10) (2, 11).

of exceptional biological diversity (6).

Forest loss in the corridor has long been driven by multiple interacting forces: weak governance, conflicting property regimes, high poverty, climate change, illegal logging, infrastructure megaprojects, and agribusiness expansion (6, 7). But a compelling case can be made for the ways in which the trafficking of drugs has intensified these processes and has become a powerful deforestation driver in its own right.

One clue to this connection lies in the close correlation between the timing and location of forest loss and drug transit. Central America has long been a conduit for U.S.-bound cocaine from South America. But the isthmus’ importance as a “bridge” exploded after 2006–07, as Mexican drug-trafficking organizations (DTOs) moved their smuggling operations southward (2, 8). Porous borders, corruption, and weak public institutions made Guatemala and Honduras especially attractive to DTOs (3, 8), who increasingly routed “primary” cocaine shipments (i.e., boats or planes carrying cocaine directly from South America) into Guatemala’s Petén and eastern Honduras (2, 9). Thinly populated and with little state presence, these remote forest frontiers offer ideal conditions for traffickers evading interdiction (9).

As more cocaine flowed through eastern Honduras’ forest, loss rose apace (see the graph); the large size of new patches of detected deforestation (>5.29 ha) relative to

“Hot spots” of deforestation often overlap spatially with trafficking nodes, especially near primary drug-transfer hubs in eastern Nicaragua and eastern Honduras (6, 9). For example, in 2011, Honduras’ Río Plátano Biosphere Reserve was listed by UNESCO as “World Heritage in Danger” because of alarming rates of forest loss attributed to the presence of narco-traffickers—as signaled by multiple clandestine landing strips throughout the reserve.

In the contested rural landscapes of the Petén (7), newer sites of primary drug transfer combine with established secondary transshipment routes into Mexico. In Laguna del Tigre National Park and protected areas in the municipality of Sayaxché, the intensification of drug trafficking has been concurrent with annual forest loss rates there of 5% and 10%, respectively (8, 11, 12). Cadastral analyses confirm that narco-traffickers own large ranches within Laguna del Tigre and other protected areas (13, 14).

Landing Planes, Laundering Money

What explains the spatial and temporal overlap of drug trafficking and deforestation? Strong causal evidence remains scarce, limited by classified data on traffickers’ illegal activities and the hazards of in situ research. Nevertheless, a growing number of studies identify three interrelated mechanisms by which forest loss follows the establishment of a drug transit hub.

¹Department of Geography, Ohio State University, Columbus, OH 43210, USA. ²School of Earth Sciences and Environmental Sustainability, Northern Arizona University, Flagstaff, AZ 86011, USA. ³Department of Geography and the Environment, University of Denver, Denver, CO 80208, USA. ⁴Institute for Environment and Human Security, United Nations University, 53113 Bonn, Germany. ⁵College of Natural Resources, University of Idaho, Moscow, ID 83844, USA. *Corresponding author. mcsweeney.14@osu.edu

First, forests are cut for clandestine roads and landing strips (15) (see the photo). Second, drug trafficking intensifies preexisting pressures on forests by infusing already weakly governed frontiers with unprecedented amounts of cash and weapons. When resident ranchers, oil-palm growers, land speculators, and timber traffickers become involved in drug trafficking, they are narco-capitalized and emboldened (13, 14) and so greatly expand their activities—typically at the expense of the (indigenous) smallholders who are often key forest defenders (7, 13, 16).

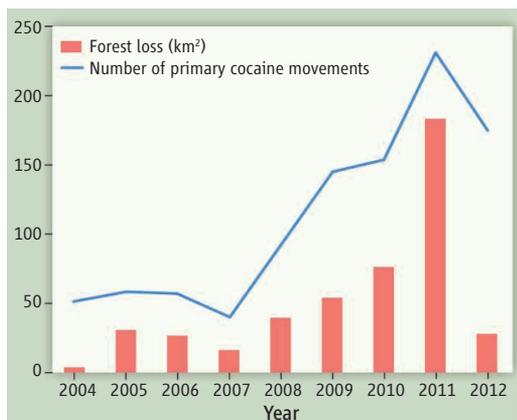
Indigenous and peasant groups report being powerless against the bribes, property fraud, and brutality dispossessing them of their lands (13, 14, 16). Forest governance at higher levels is also eroded by violence and corruption: Conservation groups have been threatened and fear entering “narco-zones” (15), while state prosecutors are bribed to look away (3).

Third, the vast profits that traffickers earn from moving drugs (8) appear to create powerful new incentives for DTOs themselves to convert forest to agriculture (usually pasture or oil-palm plantation). Profits must be laundered. Buying and “improving” remote land (by clearing it) allows dollars to be untraceably converted into private assets, while simultaneously legitimizing a DTO’s presence at the frontier (e.g., as a ranching operation). Large “narco-estates” also serve to monopolize territory against rival DTOs and to maximize traffickers’ range of activity (12–16).

In most cases, the purchase and conversion of forests within protected areas and indigenous territories is illegal. But traffickers have enough political influence to ensure their impunity and, where necessary, to falsify land titles (14, 16). They can then profit from land speculation when they sell to criminal organizations—domestic and foreign—who are increasingly diversifying into rural enterprise (12, 14). These actors may in turn sell to legitimate corporate interests looking to invest in Central American agribusiness (7, 12, 16). The result is permanent conversion of forests to agriculture.

Drug Policies Are Conservation Policies

In contexts of drug crop cultivation—particularly in the Andes—analysts have long noted that eradication policies often push coca (and opium poppy and marijuana) growers into ever more ecologically sensitive zones, with substantial environmental impacts (1,



Deforestation and drug trafficking in eastern Honduras. Deforested area is the sum of new clearings >5.29 ha detected by the Moderate Resolution Imaging Spectroradiometer (MODIS). For materials and methods, see the supplementary materials.

17). Relatively little attention, however, has focused on how the same “balloon effect” is operating further up the drug commodity chain, in the countries through which drugs are being moved: Interdiction programs push traffickers into remote spaces where they exacerbate existing pressures on forests and find new opportunities for money laundering and illegal enrichment through forest conversion. For example, “successful” interdiction efforts in Honduras in 2012 (see graph) appear to be encouraging traffickers to shift operations and ecological impacts to new areas in eastern Nicaragua (18).

Ultimately, intensified ecological devastation across trafficking zones should be added to the long list of negative unintended consequences borne by poor countries as a result of the overwhelming emphasis on supply-side drug reduction policies (4).

For the international conservation community, this is an important reminder that drug policy is conservation policy. Careful interdisciplinary research is now needed to address empirical uncertainties regarding the magnitude and dynamics of the narco-trafficking–deforestation relation, especially how narco-capital (especially via money laundering and bribery) influences environmental governance, agrarian futures, and ecosystem services. Such research will inform not only conservation policy but evidence-based drug policy, too (1, 4). For example, recognizing the ecological costs of drug trafficking in transit countries would improve full-cost pricing analyses of the drug policy scenarios explored by the OAS.

Of course, drug policy innovations alone will never end deforestation in Central America. But well-targeted drug policy reforms could mitigate a compounding pressure on

these biodiverse forests and buy time for states, conservationists, and rural communities to renew protected area governance and enforcement. Rethinking the war on drugs could yield important ecological benefits.

References and Notes

1. A. Briones *et al.*, Eds., *The Drug Problem in the Americas* (General Secretariat, OAS, Washington, DC, 2013).
2. United Nations Office on Drugs and Crime, *Transnational Organized Crime in Central America and the Caribbean: A Threat Assessment* (UNODC, Vienna, 2012).
3. J. M. Bunck, M. R. Fowler, *Bribes, Bullets, and Intimidation: Drug Trafficking and the Law in Central America* (Pennsylvania State Univ. Press, University Park, PA, 2012).
4. Global Commission on Drug Policy, *War on Drugs: Report of the Global Commission on Drug Policy* (Global Commission on Drug Policy, 2011).
5. Food and Agriculture Organization of the United Nations, “Global forest resources assessment 2010” (FAO, Rome, 2010).
6. D. J. Redo, H. R. Grau, T. M. Aide, M. L. Clark, *Proc. Natl. Acad. Sci. U.S.A.* **109**, 8839 (2012).
7. N. Cuéllar *et al.*, *Territorial Dynamics in Central America: Context and Challenges for Rural Communities* (Fundación PRISMA, San Salvador, 2011).
8. C. J. Arnason, E. L. Olson, Eds., *Organized Crime in Central America: The Northern Triangle* (Woodrow Wilson International Center for Scholars, Washington, DC, 2011).
9. Bureau of International Narcotics and Law Enforcement Affairs, “2013 International Narcotics Control Strategy Report” (Department of State, Washington, DC, 2013).
10. S. T. Plumb, E. A. Nielsen, Y.-S. Kim, *Forests* **3**, 244 (2012).
11. O. Regalado *et al.*, “Mapa de cobertura forestal de Guatemala 2010 y dinámica de la cobertura forestal 2006–2010” [National Forestry Institute (INAB), National Council for Protected Areas (CONAP), Universidad del Valle de Guatemala, Universidad Rafael Landívar, Guatemala City, 2012].
12. L. Grandia, *Dev. Change* **44**, 233 (2013).
13. J. Grüberg, L. Grandia, B. Milian and team, *Tierra y Igualdad: Desafíos para la Administración de Tierras en Petén, Guatemala* (Agriculture and Rural Development, World Bank, Washington, DC, 2012).
14. InSight Crime, *Grupos de Poder en Petén: Territorio, Política y Negocios* (Insight Crime, Medellín, Colombia, and American Univ., Washington, DC, 2011); www.libertopolis.com/wp-content/files/REPORTE_PETEN_DE_InSightCrime_Parte_1.pdf.
15. W. Allen, *Yale Environment* **360**, 8 October 2012.
16. K. McSweeney, Z. Pearson, “Prying native people from native lands: Narco business in Honduras” *NACLA Report on the Americas*, 7 January 2014.
17. A. V. Bradley, A. C. Millington, *Ecol. Soc.* **13**, 31 (2008).
18. H. Stone, “Nicaragua coast becomes gateway for Honduras drug flights” (Insight Crime, Medellín, Colombia, and American Univ., Washington, DC, 2012); www.insight-crime.org/news-analysis/nicaragua-coast-becomes-gateway-for-honduras-drug-flights.

Acknowledgments: Portions of this work were supported by grants to K.M. from the National Geographic Society, Ohio State University’s (OSU’s) Mershon Center for International Security Studies, OSU’s Office of International Affairs, and the Association of American Geographers and by faculty grants to E.A.N. from Northern Arizona University (NAU). Planet Action, the Landscape Conservation Initiative at NAU, and the Science Foundation of Arizona provided support to O.W. We thank S. Sesnie, reviewers, and Terra-i.org.

Supplementary Materials

www.sciencemag.org/content/343/6170/489/suppl/DC1

10.1126/science.1244082