Colombia's policies put the endangered ecosystems of the páramos at risk.

PHOTO: ISTOCK.COM/DALOMO84

Edited by **Jennifer Sills**

Undermining Colombia's peace and environment

In 2016, Colombia's government and the Revolutionary Armed Forces of Colombia (FARC) signed a long-awaited peace agreement. Although promising for Colombia's people, the agreement came with environmental risks given that FARC had unintentionally protected vast areas of forest by using them as camouflage (*1*). Because Colombia had enjoyed a trend of improvements in safety (*2*), wealth (*3*), and equity (*4*)—socioeconomic variables that affect the relationship people have with the environment (*5*, *6*)—it seemed possible that Colombia's government could work with local communities to better protect the country's important biodiversity and ecosystems. Unfortunately, with the 2018 election of President Iván Duque, the local communities critical to environmental stewardship have been put in jeopardy once again.

Duque openly campaigned against the 2016 peace agreement and has worked to undermine it since the election. He objected to the Special Jurisdiction for Peace, a transitional tribunal that investigates crimes against humanity committed by all actors involved in Colombia's decades-long conflict (*7*). His administration also launched a controversial military operation that penalized local communities for their relatively small role in deforestation without prosecuting the well-connected and politically influential actors known to drive deforestation at a substantially larger scale (*8*). In June, Duque's government seemed to take a positive step by supporting a new law that creates opportunities for fighting against deforestation (*9*). However, his political party undermined this progress by blocking both the ratification of the Escazú Agreement (*10*), a Latin American and Caribbean treaty that pledges multilateral efforts toward sustainability and environmental protection in an effort to support the most vulnerable people, and the implementation of the Agrarian Specialty project (*11*), an initiative aligned with the goals of the peace agreement that would have facilitated resolutions to land disputes.

Environmental protection in Colombia depends on the empowerment and cooperation of local people (*12*). The rapid increase in violence, poverty, and inequity that coincides with Duque's actions against the peace process (*2*–*4*) has created societal conditions that could accelerate the disruption of endangered ecosystems, including forests and páramos (high-altitude wetlands and biodiversity hotspots), that provide indispensable benefits within and beyond Colombia's borders. The 2022 elections in Colombia will be critical for both people and ecosystems. Scientists must speak up to educate candidates and voters about the socio-environmental consequences of their actions.

Alejandro Salazar[1]*, Juan F. Salazar[2], Santiago J. Sánchez-Pacheco[3], Adriana Sanchez[4] Eloisa Lasso[5], Juan C. Villegas[6], Paola A. Arias[2], Germán Poveda[7], Ángela M. Rendón[2], Maria R. Uribe[8], Juan C. Pérez[9], Jeffrey S. Dukes[10]

[1]Department of Environmental and Forest Sciences, Agricultural University of Iceland, Reykjavík, Iceland. [2]Grupo de Ingeniería y Gestión Ambiental, Escuela Ambiental, Facultad de Ingeniería, Universidad de Antioquia, Medellín, Colombia. [3]Departamento de Biología, Facultad de Ciencias, Pontificia Universidad Javeriana, Bogotá, DC, Colombia. [4]Programa de Biología, Facultad de Ciencias Naturales, Universidad del Rosario, Bogotá, DC, Colombia. [5]Departamento de Ciencias Biológicas, Universidad de los Andes, Bogotá, DC, Colombia. [6]Grupo de Ecología Aplicada, Escuela Ambiental, Facultad de Ingeniería, Universidad de Antioquia, Medellín, Colombia. [7]Facultad de Minas, Universidad Nacional de Colombia, Medellín, Colombia. [8]Department of Earth System Science, University of California Irvine, Irvine, CA 92697, USA. [9]Facultad de Ciencias, Universidad Nacional de Colombia, Medellín, Colombia. [10]Department of Forestry and Natural Resources and Department of Biological Sciences, Purdue University, West Lafayette, IN 47907, USA.
*Corresponding author.
Email: alejandro.salazar-villegas@fulbrightmail.org

REFERENCES AND NOTES

1. A. Salazar *et al*., *Front. Ecol. Environ.* **16**, 525 (2018).
2. Colombian Ministry of Defense, "Logros de la política de defensa y seguridad" (2021); www.mindefensa.gov.co/irj/go/km/docs/Mindefensa/Documentos/descargas/estudios_sectoriales/info_estadistica/Logros_Sector_Defensa.pdf [in Spanish].
3. National Administrative Department of Statistics (DANE), "Monetary poverty in Colombia" (Technical Bulletin, Bogotá, 2019); www.dane.gov.co/files/investigaciones/condiciones_vida/pobreza/2019/Boletin-pobreza-monetaria_2019.pdf [in Spanish].
4. World Bank, Colombia CO: Gini Coefficient (GINI Index): World Bank Estimate 1992–2019 (2019); www.ceicdata.com/en/colombia/poverty/co-gini-coefficient-gini-index-world-bank-estimate.
5. J. C. Fagua, J. A. Baggio, R. D. Ramsey, *Ecosphere* **10**, e02648 (2019).
6. C. Hoffmann, J. R. G. Márquez, T. Krueger, *Land Use Pol.* **77**, 379 (2018).
7. "Colombia's President Iván Duque undermines a peace deal," *Economist* (2019).
8. J. C. Rodríguez-de-Francisco *et al*., *For. Pol. Econ.* **127**, 102450 (2021).
9. "'¡Es un hecho histórico para el país!': Ministro de Ambiente tras aprobación del proyecto de ley que penaliza la deforestación," *Minambiente* (2021); www.minambiente.gov.co/index.php/noticias/5160-es-un-hecho-historico-para-el-pais-ministro-de-ambiente-tras-aprobacion-del-proyecto-de-ley-que-penaliza-deforestacion [in Spanish].

10. "The ratification of the Escazú Agreement sinks in the Colombian Congress," *Archyde* (2021).
11. "Promotoras de la Especialidad Agraria dan por hundido el proyecto por falta de agendamiento," *El Espectador* (2021) [in Spanish].
12. L. W. Cole, *Ecol. Law Q.* **19**, 619 (1992).

10.1126/science.abj8367

EU Court to rule on banned pesticide use

In 2013, after evidence demonstrated the adverse effects of neonicotinoids on bees (*1*, *2*), the European Commission limited the use of clothianidin, thiamethoxam, and imidacloprid outside of permanent greenhouses. After an evaluation, these bans were strengthened in 2018 (*3*). In May, the Court of Justice of the European Union upheld the legality of these bans (*4*). However, this decision does not address a loophole used by many EU member states to continue to permit the use of neonicotinoids.

EU member states have relied on a provision in the EU pesticide regulation that allows the short-term authorization of pesticides in "emergency situations" where "such a measure appears necessary because of a danger which cannot be contained by any other reasonable means" (*5*). The regulation does not further define what constitutes an emergency. Given this lack of explicit constraints, several member states allow the "emergency authorization" of banned neonicotinoids for major crops, particularly sugar beets, on a recurring basis (*6*).

The Court of Justice of the EU will soon interpret what constitutes an emergency in a case that could substantially affect both agricultural practices and the conservation of pollinating insects in Europe (*7*). Important questions in this case include whether the use of pesticide-coated seeds in outdoor crops can be considered an emergency measure (in light of the fact that the use of such seeds implies that the prospective danger is not unexpected); whether foreseeable, common, or cyclical threats to plants, such as annual pest occurrence, can constitute an emergency; and the extent to which costs can be considered in determining whether an alternate means of pest control is "reasonable." It is almost by definition difficult to define "emergency," given that the word implies an element of the unknown, but in this legal context, it must be construed restrictively.

Allowing emergency derogation when the harm to be prevented is regular and foreseeable, and alternative means of preventing the harm are available (*8*), undermines both the ban and the intent of the pesticide regulation. Instead, it is incumbent on Member States to require and support alternative methods of pest control.

Yaffa Epstein[1]*, Guillaume Chapron[2], François Verheggen[3]
[1]Swedish Collegium for Advanced Study and Department of Law, Uppsala University, Uppsala, Sweden. [2]Department of Ecology, Swedish University of Agricultural Sciences, Uppsala, Sweden. [3]Gembloux Agro-Bio Tech, University of Liège, Gembloux, Belgium.
*Corresponding author.
Email: yaffa.epstein@jur.uu.se

REFERENCES AND NOTES

1. P. R. Whitehorn *et al.*, *Science* **336**, 351 (2012).
2. M. Henry *et al.*, *Science* **336**, 348 (2012).
3. European Food Safety Authority, "Neonicotinoids: risks to bees confirmed" (2018); www.efsa.europa.eu/en/press/news/180228.
4. *Bayer CropScience AG and Bayer AG* v. *European Commission* (Case C-499/18 P, 2021).
5. "Consolidated text: Regulation (EC) No. 1107/2009 of the European Parliament and of the Council of 21 October 2009 concerning the placing of plant protection products on the market" (2021); Article 53; https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02009R1107-20210327.
6. European Commission Directorate-General for Health and Food Safety, "Emergency authorisations in the Member States" (2021); https://ec.europa.eu/food/plants/pesticides/approval-active-substances/renewal-approval/neonicotinoids_en#emergency_authorisations_.
7. *Pesticide Action Network* v. *Belgium* (Case C-162/21, 2021).
8. H. Jactel *et al.*, *Environ. Int.* **129**, 423 (2019).

10.1126/science.abj9226

Maximize EU pollinator protection: Minimize risk

Bees and other pollinators play vital roles in biodiversity and food security, and they are a source of income and inspiration. Yet, bees' biodiversity and abundance are decreasing every day. Their decline, driven by pesticides (*1*–*3*), poses serious threats to the environment, ecosystems, and human health. The European pesticide authorization framework states that a pesticide can only be put on the market if it has no harmful effects on human health or animal health and no unacceptable effects on the environment (*4*). EU ministries met in June to decide what constitutes an "acceptable" effect of a pesticide on bees (*5*). Despite scientific evidence indicating that the current level of protection is barely adequate, they tentatively agreed to provide even less protection moving forward (*5*). We call on EU governments to apply the maximum level of protection of pollinators from pesticides (*6*).

In 2013, the European Food Safety Authority, at the request of EU member state governments, set a maximum acceptable level of 7% reduction on colony size (i.e., number of bees per colony) (*7*). Many beekeepers, environmentalists, and scientists have argued that scientific evidence shows that 7% is already too high (the only truly acceptable level would be 0%) (*8*). Evidence also shows that wild pollinator species, which are more vulnerable than honey bees to pesticides (*9*), continue to rapidly decline (*10*–*12*). Disregarding the abundant evidence and the consensus of scientists, the EU ministries agreed to raise the acceptable maximum from 7 to 10% (*5*).

The impact of pesticides on pollinators is vast, clear, and increasingly well documented. The EU ministries must act responsibly and make the rigorous decisions that will protect biodiversity by basing their regulatory requirements on scientific evidence. They must not accept any negative impact on honey bee colonies or other pollinators due to pesticide exposure. EU ministries should never lower the level of protection for bees. Doing so puts future generations at risk of living in a world without pollinators.

Noa Simon-Delso[1]*, Alexandre Aebi[2], Gerard Arnold[3], Jean Marc Bonmatin[4], Fani Hatjina[5], Piotr Medrzycki[6], Fabio Sgolastra[7]
[1]BeeLife European Beekeeping Coordination, Louvain la Neuve, Belgium. [2]Laboratoire de Biodiversité du Sol, Instituts de Biologie et d'Ethnologie, Université de Neuchâtel, Neuchâtel, Switzerland. [3]Laboratoire Evolution, Génomes, Comportement, Ecologie, Centre National de la Recherche Scientifique (CNRS), Gif-sur-Yvette, France. [4]Centre de Biophysique Moléculaire, CNRS, 45071 Orléans, France. [5]Institute of Animal Science, Department of Apiculture, ELGO DIMITRA, Thessaloniki, Greece. [6]Council for Agricultural Research and Economics, Agriculture and Environment Research Centre, Bologna, Italy. [7]Dipartimento di Scienze e Tecnologie Agro-Alimentari, Alma Mater Studiorum Università di Bologna, Bologna, Italy.
*Corresponding author. Email: simon@bee-life.eu

REFERENCES AND NOTES

1. H. Jactel *et al.*, *Comptes Rendus Biologies* **343**, 267 (2021).
2. J. M. Iwasaki, K. Hogendoorn, *Agricult. Ecosyst. Environ.* **314**, 107423 (2021).
3. L. Drivdal, J. P. van der Sluijs, *Curr. Opin. Insect Sci.* **46**, 95 (2021).
4. European Parliament, Council of the European Union, *Official J. Europ. Un.* **L309**, 1 (2009).
5. "Bees still at risk as EU member states deem significant losses acceptable," BeeLife (2021); www.bee-life.eu/post/bees-still-at-risk-as-eu-member-states-deem-significant-losses-acceptable.
6. Scientists who wish to support this Letter can add their signature here: https://scienceforbees.org.
7. EFSA, *EFSA J.* **10**, 2668 (2012).
8. "Civil society urges the Council of the EU to secure highest protection of bees and pollinators," *BeeLife* (2021); www.bee-life.eu/post/civil-society-urges-the-european-council-to-secure-highest-protection-of-bees-and-pollinators.
9. M. Arena, F. Sgolastra, *Ecotoxicology* **23**, 324 (2014).
10. E. E. Zattara, M. A. Aizen, *One Earth* **4**, 114 (2021).
11. C. A. Hallmann *et al.*, *PLOS ONE* **12**, e0185809 (2017).
12. A. Nieto *et al.*, "European red list of bees" (Luxembourg, Publication Office of the European Union, 2014).

10.1126/science.abj8116

Maximize EU pollinator protection: Minimize risk

Jennifer Sills, Noa Simon-Delso, Alexandre Aebi, Gerard Arnold, Jean Marc Bonmatin, Fani Hatjina, Piotr Medrzycki, and Fabio Sgolastra

Science **373** (6552), . DOI: 10.1126/science.abj8116