

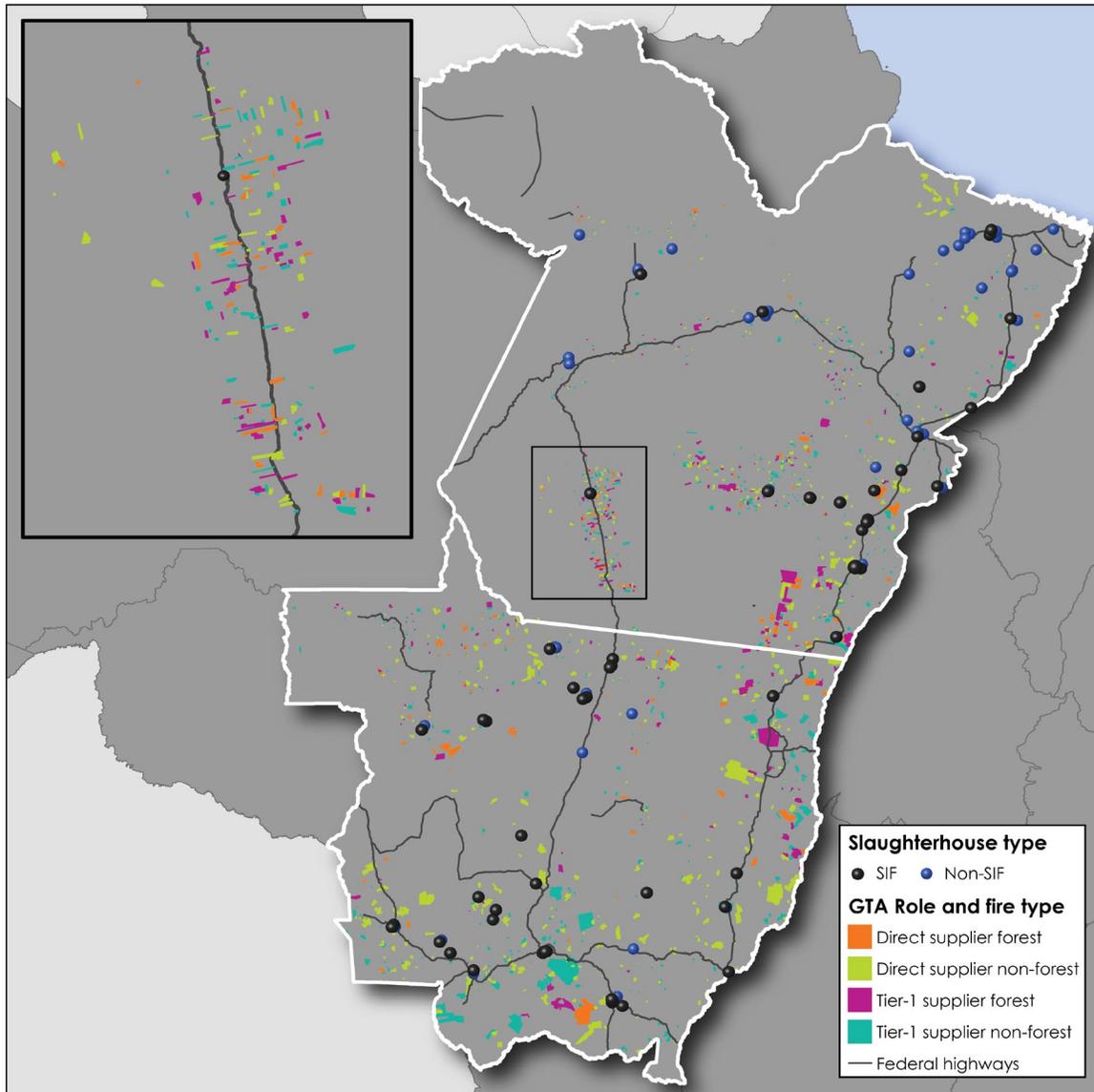


Center for Sustainability
and the Global Environment
NELSON INSTITUTE
UNIVERSITY OF WISCONSIN-MADISON

The role of Brazil's cattle sector in the 2019 fire season

Report by Lisa Rausch, Jacob Munger, Ian Schelly and Holly Gibbs.

In 2019, the Brazilian Amazon experienced one of its worst years for fires in decades. Here we have assessed the role of the cattle sector in the Amazon's two major ranching states, Mato Grosso and Pará.



Major findings:

- Fires were observed on 8,462 properties in Mato Grosso and Pará between January 2019 and early February 2020. For 36% (3,002) of these properties, the fires occurred in a forested area.
- 39 out of the 50 major, SIF slaughterhouses (78% of the total) have recently purchased directly from a property (i.e., a direct supplier) that had a forest fire during our study period. Nearly all slaughterhouses (98%) processed animals raised on indirect suppliers (properties that sold cattle direct suppliers) with a recent forest fire.
- Our analysis of Brazil's animal health system data (GTA) shows that at least 106 direct suppliers to SIFs and 332 indirect suppliers to SIFs had a forest fire. Slaughterhouses with monitoring systems in place may have begun to exclude direct suppliers that had forest fires prior to July 31, 2019, as these fires could have been detected by the most recently released PRODES data (covering August 1, 2018 to July 31, 2019). However, information about fires that occurred after this date (including during the height of the 2019 fire season) will be unavailable to slaughterhouses to use in purchase decisions until at least the end of 2020.¹

- Additional fires outside of properties that were registered in the GTA may have occurred on areas that are extensions of GTA properties and owned by the same producer.² These fires would not be detected by current monitoring systems, which assess only the GTA-registered portions of direct suppliers. At least half of direct suppliers have properties that extend beyond the portion they register in the GTA.³
- Over half of direct suppliers to SIFs with fires and nearly two-thirds of indirect suppliers to SIFs with fires were part of supply chains of the three major companies -- JBS, Marfrig, and Minerva. These companies have had zero-deforestation commitments and monitoring systems for their direct suppliers in place since 2009, however these monitoring systems are imperfect and purchases from direct suppliers with deforestation, from fires or otherwise, still occur.⁴
- Supplying properties with fires tended to be large.
 - Of the 106 direct suppliers to SIFs with forest fires, 63% were large sized properties, >1,000 ha; 17% were medium-sized properties, 400-1,000 ha; 20% were under 400 ha
 - Of the 332 indirect suppliers to SIFs with forest fires, 50% were large sized properties, >1,000 ha; 20% were medium-sized properties, 400-1,000 ha; 30% were under 400 ha

Methods:

Data Acquisition: We downloaded georeferenced fire location data for January 1, 2019 – February 7, 2020 from NASA’s VIIRS fire detection product.

Data Selection: We selected only fire points located in the states of Mato Grosso or Pará, and that were coded as “high-confidence” in the VIIRS dataset.

Identifying forest fires: We overlaid the fire points on PRODES landcover maps. We classified points located in either forest or 2019 deforestation as “forest fires”.

Identifying properties with fires: We overlaid the fire points on SICAR, INCRA, and Terra Legal property boundary maps in order to identify all properties with fires.

Identifying direct and indirect suppliers to SIFs: We classified properties as direct or indirect suppliers based on analysis of GTAs from Jan 2017 – May 2019. Direct suppliers had at least one transaction with a major, federally inspected slaughterhouse (known as SIFs in Brazil) in 2018 or 2019. Indirect suppliers had at least one transaction with a direct supplier in 2017 or 2018. A single property may have acted as both a direct and an indirect supplier during this time period.

Study Limitations: Our study identified fires on direct and indirect cattle suppliers based on transactions that occurred prior to most of the fires during our study period. Some cattle suppliers with fires may have since stopped selling cattle. However, as described above, most of these suppliers have likely not yet been subjected to scrutiny by slaughterhouses over fires during our study period, meaning it is likely that they continue to participate in these cattle supply chains. Some of these suppliers may be blocked by slaughterhouses in the future as the PRODES deforestation data becomes available.

¹http://www.obt.inpe.br/OBT/assuntos/programas/amazonia/prodes/pdfs/Metodologia_Prodes_Deter_revisada.pdf

²<https://www.theguardian.com/environment/2020/feb/20/meat-company-faces-heat-over-cattle-laundering-in-amazon-supply-chain>

³Gibbs, Skidmore, Rausch et al. New opportunities to reduce pervasive deforestation under Brazil’s Zero-Deforestation Cattle Agreements. *In prep.*

⁴[Gibbs, Munger, L’Roe et al. Did Ranchers and Slaughterhouses Respond to Zero-Deforestation Agreements in the Brazilian Amazon?](https://www.gibbs.com.br/conservation-letters/2016/01/32-4)

Conservation Letters, January/February 2016, 9(1), 32–4; Gibbs, Moffette, Munger et al. Impacts of Zero-Deforestation Cattle Agreements in the Brazilian Amazon limited by inconsistent and evasive behavior. *Under Review*;

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