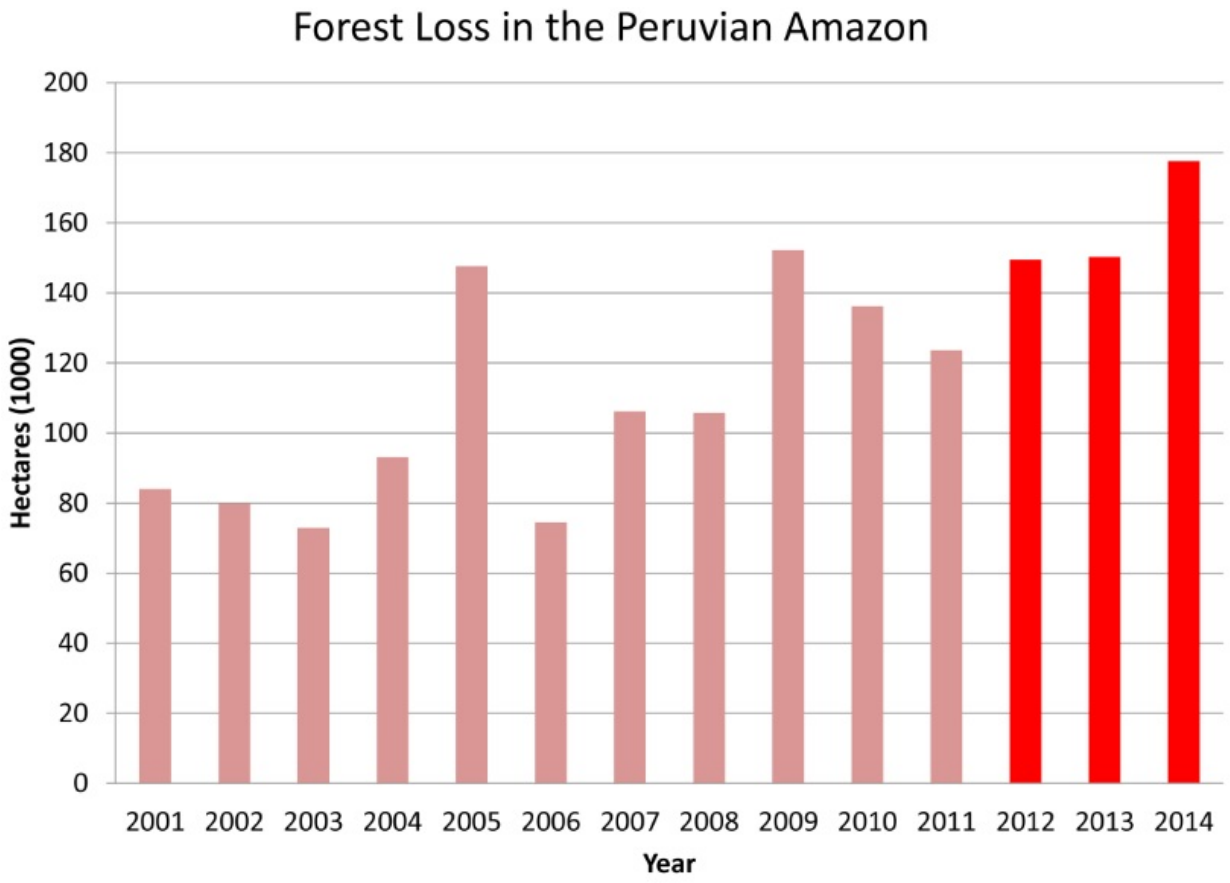
MAAP #25: Deforestation Hotspots in the Peruvian Amazon, 2012-2014

Deforestation continues to increase in the Peruvian Amazon. According to the latest information from the Peruvian Environment Ministry[1], 2014 had the highest annual forest loss on record since 2000 (177,500 hectares, or 438,600 acres per year). 2013 and 2012 had the third and fourth highest annual forest loss totals, respectively (behind only 2009).



Source: PNCB/MINAM

2016. This PDF was generated from MAAPROJECT.org MAAP is developed by Amazon Conservation Association (ACA) and Conservación Amazónica (ACCA) All use is Open-Access, but must contain an attribution link back to maaproject.org or the citation at the end of the article.

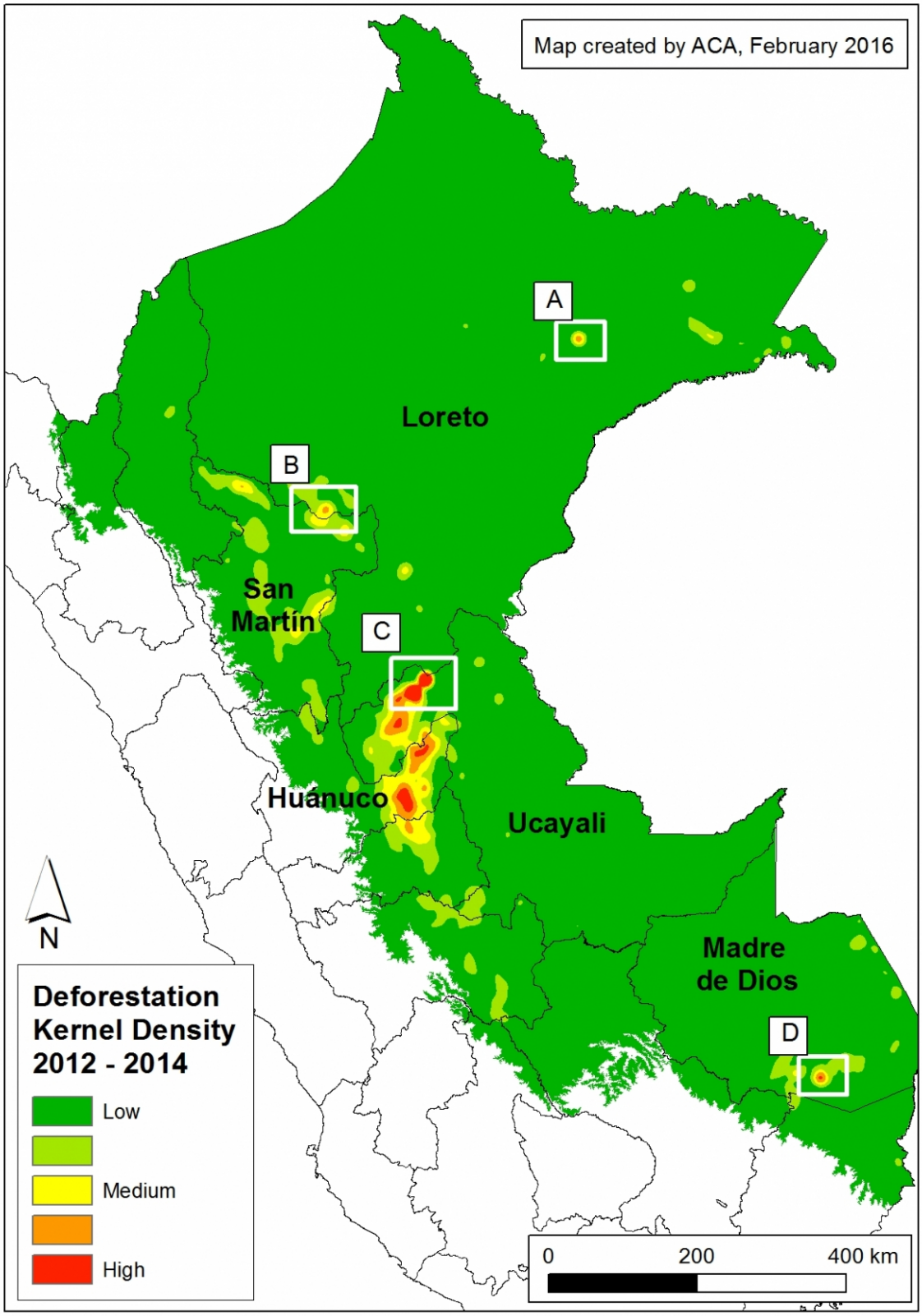


Image 25a. Kernel density map for forest loss in the Peruvian Amazon between 2012 and 2014. Data: PNCB/MINAM, Hansen/UMD/Google/USGS/NASA.

To better understand where this deforestation is concentrated, we conducted **kernel density estimation**. This type of analysis calculates the magnitude per unit area of a particular phenomenon (in this case, forest loss).

Image 25a shows the kernel density map for forest loss in the Peruvian Amazon between 2012 and 2014 and reveals that **recent deforestation is concentrated in a number of "hotspots"** in the departments of Loreto, San Martin, Ucyali, Huanuco, and Madre de Dios.

Insets A-D highlight four areas with high densities of forest loss described in previous MAAP articles. We are currently studying

2016. This PDF was generated from MAAPROJECT.org MAAP is developed by Amazon Conservation Association (ACA) and Conservación Amazónica (ACCA) All use is Open-Access, but must contain an attribution link back to maaproject.org or the citation at the end of the article.

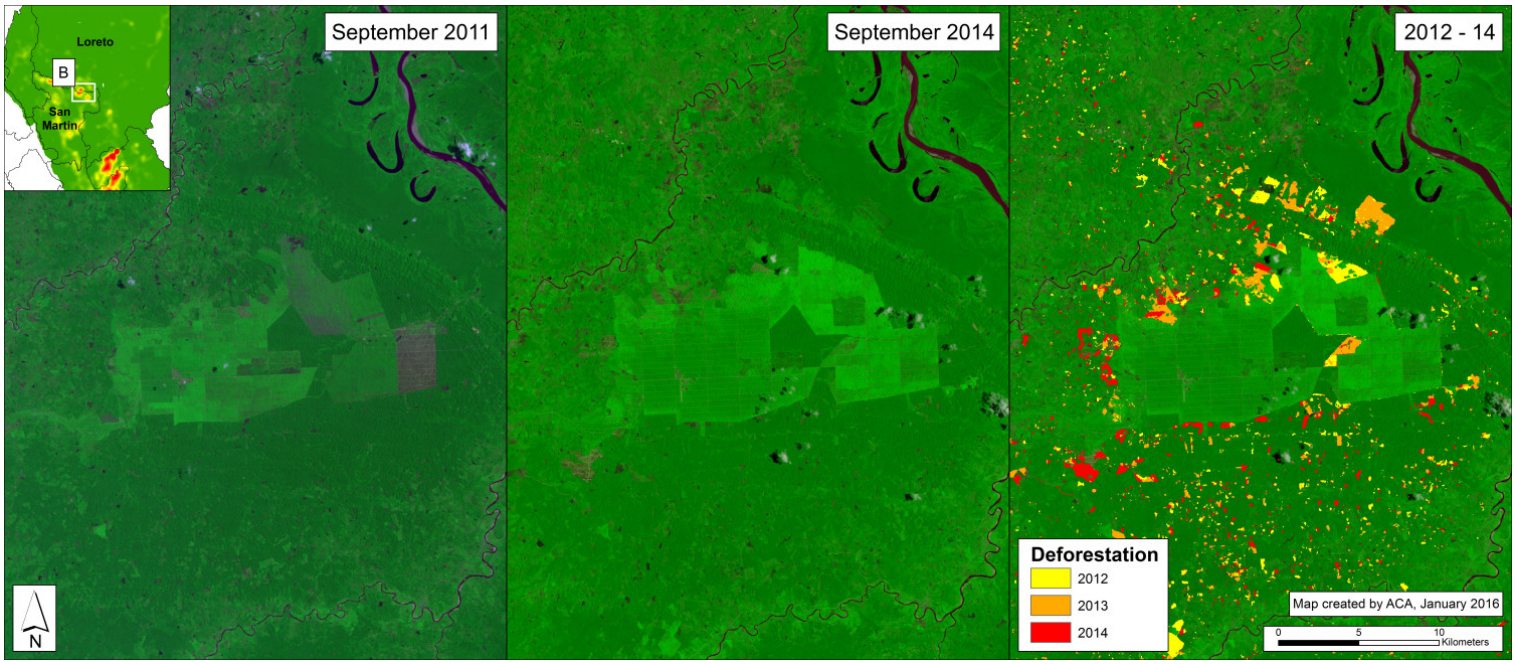
the other high density deforestation areas not included in the insets.

Inset A: Cacao in Loreto

Image 25b. Deforestation for cacao in northern Peru between December 2012 (left panel) and September 2013 (center panel) and cumulative 2012-14 (right panel). Data: USGS, PNCB/MINAM, Hansen/UMD/Google/USGS/NASA

Inset A (from Image 25a) indicates the deforestation of over **2,000 hectares** (4,940 acres) on property owned by the company **United Cacao** (through its wholly owned Peruvian subsidiary, Cacao del Peru Norte) near the town of **Tamshiyacu** in the department of Loreto. MAAP #9 demonstrated that much of this deforestation took place at the expense of primary forest. **Image 25b** highlights this area, showing the forest loss between December 2012 (left panel) and September 2013 (center panel; the pinkish areas indicate recently cleared forests). The right panel shows the cumulative deforestation between 2012 and 2014. See MAAP #9 and MAAP #2 for more details.

Inset B: Oil Palm in Loreto/San Martin



2016. This PDF was generated from MAAPROJECT.org MAAP is developed by Amazon Conservation Association (ACA) and Conservación Amazónica (ACCA) All use is Open-Access, but must contain an attribution link back to maaproject.org or the citation at the end of the article.

Image 25c. Deforestation for oil palm in northern Peru between September 2011 (left panel) and September 2014 (center panel) and cumulative 2012-14 (right panel). Data: USGS, PNCB/MINAM, Hansen/UMD/Google/USGS/NASA

Inset B (from Image 25a) indicates expanding deforestation within and around two large-scale **oil palm plantations** along the Loreto-San Martin border. **Image 25c** highlights this area, showing the forest loss between Setpember 2011 (left panel) and September 2014 (center panel). The right panel shows the cumulative deforestation between 2012 and 2014 (6,363 hectares, or 15,700 acres). See MAAP #16 for more details.

Inset C: Oil Palm in Ucayali

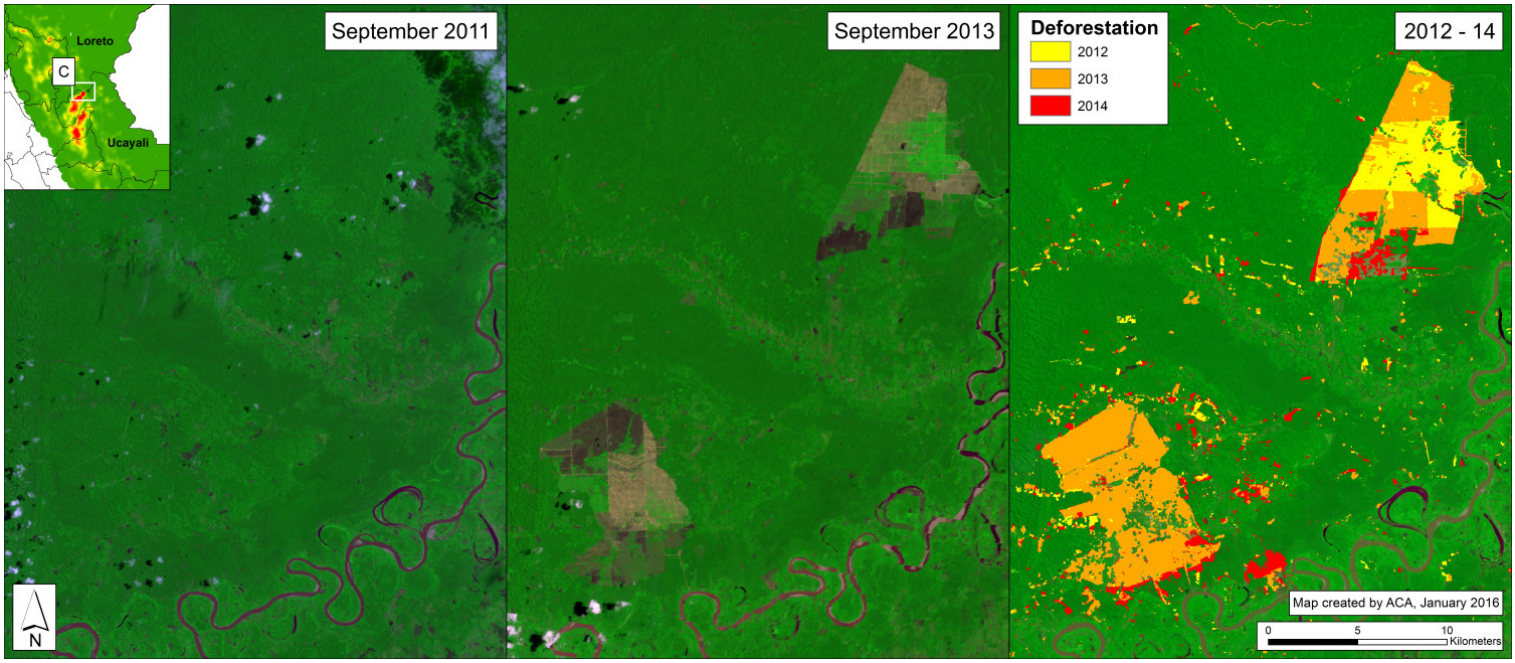


Image 25d. Deforestation for oil palm in central Peru between September 2011 (left panel) and September 2013 (center panel) and cumulative 2012-14 (right panel). Data: USGS, PNCB/MINAM, Hansen/UMD/Google/USGS/NASA

Inset C (from Image 25a) indicates the deforestation of 9,400 hectares (23,200 acres) of primary forest for two large-scale **oil palm plantations** in the department of Ucayali. **Image 25d** highlights this area, showing the forest loss between September 2011 (left panel) and September 2013 (center panel; the pinkish-black areas indicate recently cleared forests). The right panel shows the cumulative deforestation between 2012 and 2014. See MAAP #4 for more details.

Inset D: Gold Mining in Madre de Dios

2016. This PDF was generated from MAAPROJECT.org MAAP is developed by Amazon Conservation Association (ACA) and Conservación Amazónica (ACCA) All use is Open-Access, but must contain an attribution link back to maaproject.org or the citation at the end of the article.

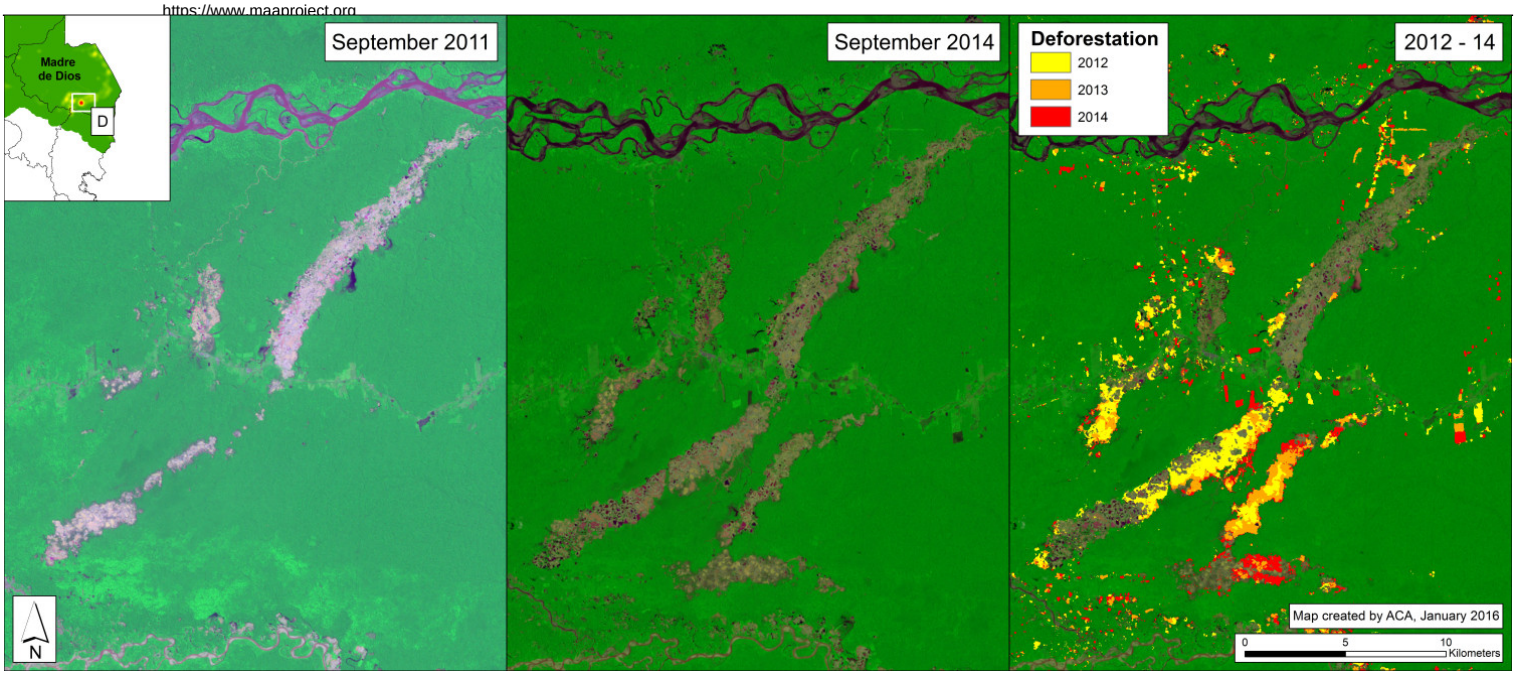


Image 25e. Deforestation for gold mining in southern Peru between September 2011 (left panel) and September 2014 (center panel) and cumulative 2012-14 (right panel). Data: USGS, PNCB/MINAM, Hansen/UMD/Google/USGS/NASA

Inset D (from Image 25a) indicates the extensive illegal **gold mining deforestation** in the buffer zone of Tambopata National Reserve in the department of Madre de Dios. **Image 25e** highlights this area, showing the forest loss between September 2011 (left panel) and September 2014 (center panel; the lighter areas indicate recently cleared forests). The right panel shows the cumulative deforestation between 2012 and 2014 (4,738 hectares, or 11,700 acres). See MAAP #1 for more details.

It is important to emphasize that in this case, extensive deforestation continued in 2015. See MAAP #12 and MAAP #24 for more details.

Methodology

We conducted this analysis using the Kernel Density tool from Spatial Analyst Tool Box of ArcGis 10.1 software. Our goal was to emphasize local concentrations of deforestation in the raw data while still representing overarching patterns of deforestation between 2012 and 2014. We accomplished this using the following parameters:

Search Radius: 15000 layer units (meters)

Kernel Density Function: Quadratic

Cell Size in the map: 200 x 200 meters (4 hectares)

Everything else was left to the default setting.

References

[1]MINAGRI-SERFOR/MINAM-PNCB (2015) Compartiendo una visión para la prevención, control y sanción de la deforestación y tala ilegal.

Citation

Finer M, Snelgrove C, Novoa S (2015) Deforestation Hotspots in the Peruvian Amazon, 2012-2014. MAAP: 25.

2016. This PDF was generated from MAAPROJECT.org MAAP is developed by Amazon Conservation Association (ACA) and Conservación Amazónica (ACCA) All use is Open-Access, but must contain an attribution link back to maaproject.org or the citation at the end of the article.

2016. This PDF was generated from MAAPROJECT.org MAAP is developed by Amazon Conservation Association (ACA) and Conservación Amazónica (ACCA) All use is Open-Access, but must contain an attribution link back to maaproject.org or the citation at the end of the article.