

# First Record of *Lagothrix flavicauda* on the Eastern Side of the Río Huallaga: An Expansion of its Known Geographic Distribution

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**Abstract:** In this report we present the first record of *Lagothrix flavicauda* in montane forests on the eastern side of the Río Huallaga. The record of five groups occurred during primate censuses between the villages of Monopampa and Libertad, along the horseshoe that connects the basins of the ríos Huallaga and Pozuzo. With this record, the known distribution of *L. flavicauda* is extended to the southeast, up to the boundary with the Región Pasco. Five other primates, among them *Lagothrix lagothricha tschudii*, occur in the forests there, at elevations above 1900 m above sea level. As in other parts of the Región Huánuco, deforestation is the main threat for the primates and the wildlife in general.

**Key words:** Primates, Andean montane forest, *Lagothrix flavicauda*, new record, distribution

## Introduction

The Peruvian yellow-tailed woolly monkey (*Lagothrix flavicauda*), one of the world's 25 most endangered primates (Mittermeier *et al.* 2012), is the only species that has been studied in Peru's montane forests. The studies are as yet insufficient, however, and not least regarding its geographic distribution, occurrence and causes of seasonal migrations, sympatric primate species and competition for food resources, and comparative population densities in its range, all aspects that are important for the conservation of this primate and others that inhabit the montane forests.

A number of studies of *L. flavicauda* have been carried out in the Región Amazonas, all in relatively restricted areas, and oriented towards behavior and food resources (Leo Luna 1980, 1982, 1987; Cornejo 2008), threats (Leo Luna 1984), activity budgets and behavior patterns (Shanee and Shanee 2011), population densities (Leo Luna 1982, 1987; Shanee and Shanee 2011; Cornejo 2007; Aquino *et al.* 2015), and its geographical distribution (Shanee *et al.* 2008; Shanee 2011). Aquino (2006) was the first to report the occurrence of *Lagothrix flavicauda* in the Región Huánuco, on the right bank of the Río Crisnejas, boundary with the Región San Martín. One group was seen and no exploration or censuses were carried out to the south to delimit their geographic distribution. Aquino and Ramos (2010) believed that the distribution of

*L. flavicauda* southwards could reach the microbasin of the Río Chinchao and would include montane forests of the ríos Monzón, Patuy Rondos and Carpish. Shanee (2011) considered its range in Huánuco to cover the montane forests from the boundary with the province of Tocache (Región San Martín) to the Río Magdalena, whilst Aquino *et al.* (2015) considered the montane forests on the left bank of the Río Alto Huallaga as the probable limit to its distribution to the south. Prior to this study, *L. flavicauda* was observed only in montane forests of the microbasin of the Río Chontayacu (Aquino *et al.* 2015), and recently in forest near the village of Alto Azul in the microbasin of the Río Santa Martha (Aquino *et al.* 2016). Based on this finding and interviews, Aquino *et al.* (2016) considered the montane forests of the left bank of the Río Alto Huallaga to be the limit of its distribution to the south. There were still doubts, however, about the limit of its distribution southeast of Huánuco, right bank of the Río Huallaga. During interviews carried out in September 2010 (R. Aquino, pers. obs.) in the village of Muña, on the right bank of the Río Huallaga, we were informed of the existence of a monkey known as “coto negro” living in the highest elevations of montane forests between Monopampa and Río Pozuzo, the phenotypic characteristics of which, as described by those interviewed, corresponded to *L. flavicauda*.

This motivated us to conduct this study to (1) confirm the existence of this species between the ríos Alto Huallaga and

Pozuzo, (2) to determine the current status of its populations and the limit of its distribution to the southeast, and (3) record the primates with which it shares its habitat. It is appropriate to mention that we have no knowledge of any biodiversity studies conducted for this part of the Región Huánuco. It is certainly rich in both plants and animals, many of them possibly endemic and new to science. We conducted transect censuses from 5 to 29 April 2016 between Monopampa and Libertad, and brief exploratory incursions and interviews from 6 to 21 May 2016 in forests near the villages of César Vallejo and Fujimori, located in the microbasin of the Río Tulumayo and the villages of Herminio Valdizán, Ugarteche, Río Azul and Cedropampa, all located near to the boundary with the Región Ucayali. In this report we present the results.

## Methods

### Study area

The study area comprises the montane forests between the basins of the ríos Alto Huallaga and Pozuzo (Fig. 1). The area is suffering deforestation for the cultivation of coffee, corn and other crops, as well as for cattle ranching, but there are still patches of relatively extensive primary forest with primates and larger mammals such as spectacled bears (*Tremarctos ornatus*) and dwarf brocket deer (*Mazama chunyi*). To search for *L. flavicauda* and other primates, we used mules to travel along the horseshoe that connects the basins of the ríos Huallaga and Pozuzo to the sectors defined for censuses. The horseshoe is about 35 km in length, and settled with seven small villages, including Monopampa, Oso Mayo and Libertad. These settlements served as references for the three survey sites in the section between Monopampa and Libertad: Pantano, Oso Mayo, and Palizada (Fig. 1). Patches of primary forest, moderately disturbed by timber extraction for house construction and livestock pens, predominated at Oso Mayo and Palizada. In Pantano, in the Monopampa sector, the vegetation was dominated by remnant forest patches heavily disturbed by selective logging for commercial purposes, and particularly for sale as firewood. We also interviewed people in the villages of César Vallejo, Fujimori, Herminio Valdizán, Ugarteche, Río Azul and Cedropampa (all located north of the Huallaga-Pozuzo horseshoe) to inquire about the presence of *L. flavicauda*, and made short exploratory trips into forests nearby, to define the limits of its distribution northward.

### Distance censused at survey sites

The purpose of the censuses was to find *L. flavicauda* and incidentally record the presence of other primates that share its habitat in this part of Amazonia. For censuses we used trails of loggers and settlers, and occasionally trails along the horseshoe between Monopampa and Libertad. For each survey site we walked between five and seven trails, with lengths that ranged from 1 to 2.5 km in length. Each trail was walked up to three times, from 07:00 to 16:00 h. Two teams of two observers simultaneously walked along the trails at an average speed of 0.4 km/hour. Every time a group of *L.*

*flavicauda* or other primate was sighted we recorded group size (when possible), perpendicular distance from the transect to the first individual seen, height (in the vertical stratum of the forest), activity at the time of detection, and presence of juveniles and infants. In all, we walked 213 km, corresponding to 532 hours of censusing (Table 2).

## Results

### Groups registered

We saw five groups during the surveys (Table 3). Contact with the first group occurred on 11 April at 15:35 h. The group of 12 was seen in Oso Mayo, more than 2 km from our camp at 2,071 m above sea level. It was detected by the noise caused during travel. On seeing us, individuals shook the branches and emitted alarm calls. After a few minutes the group quietened down, and began to forage, allowing us to count the group members for approximately 45 minutes. When contacted, all the groups were approachable, and sometimes even challenged us, indicating that they had not been exposed to hunting (Fig. 2). Good counts of adults, subadults, and juveniles were achieved for only two of the groups—the one of 12 in Oso Mayo, and a second of 15 in Palizada. Each group had three dependent infants indicating that April–May was the breeding season. Persistent rain and thick fog limited our vision to about 30 m. Field guides assured us that groups could exceed 20 individuals, without counting infants. All the groups observed between Oso Mayo and Palizada, in the Chorropampa sector, were at elevations above 1,930 m above sea level (Table 3). We found no groups at Pantano.

### Geographic distribution

In Huánuco, *L. flavicauda* inhabits the montane forests on both sides of the Río Huallaga; on the western side, its range extends from the Río Crisnejas, at the boundary with the Región San Martín, southwards to the left bank of the Río Alto Huallaga, and on the eastern side, from near the Río Alto Huallaga to the Río Pozuzo and from the Río Tulumayo in the north, to the boundary with the Región Pasco in the south (Fig. 3). It may also be inhabiting the montane forests of the regiones Ucayali and Pasco near the boundary with the Región Huánuco; something important to investigate. On the western side of the Río Huallaga, however, *L. flavicauda* is locally extinct over a large part of its range, the main cause being the destruction of its habitat for agriculture and cattle-ranching. On the eastern side of the Huallaga, this primate is still present almost throughout its range there.

### Sympatric primates

In addition to *L. flavicauda*, we registered the Peruvian woolly monkey (*Lagothrix lagothricha tschudii*), the black spider monkey (*Ateles chamek*), red howler (*Alouatta seniculus*), the large-headed capuchin (*Sapajus macrocephalus*), the Marañón white-fronted capuchin (*Cebus yuracus*), and the night monkey (*Aotus* sp.). All but *A. chamek* were found above 1,900 m; sharing as such the habitat with *L. flavicauda*,

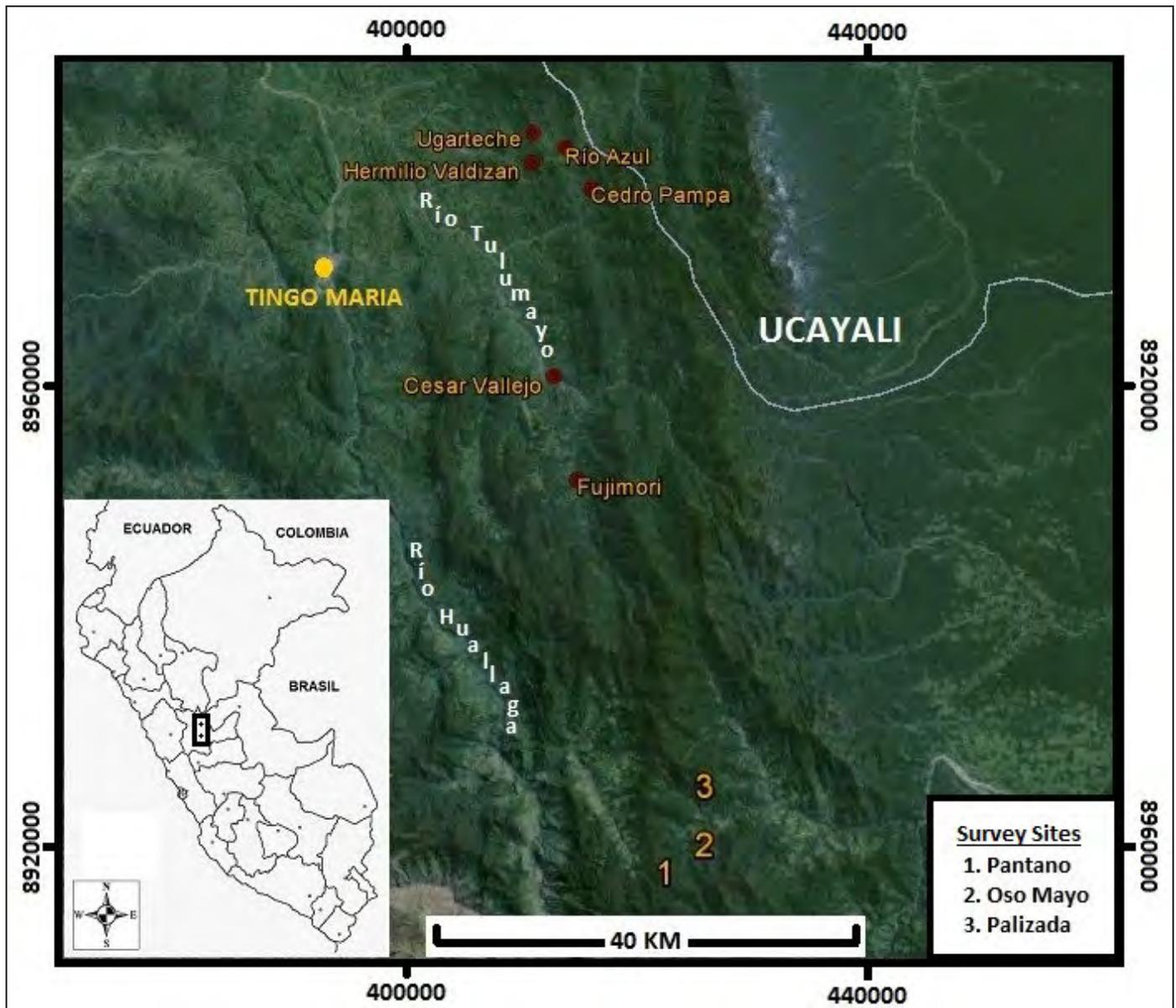


Figure 1. The survey sites and villages where interviews and brief explorations were conducted.

Table 1. Surveys sites for *L. flavicauda* between the basins of the ríos Alto Huallaga and Pozuzo.

Sectors	Survey sites*	Coordinates (UTM)	Altitude (m.a.s.l.)	Human disturbance level
Monopampa	1. Pantano	421584 / 8917132	2196	Very high
Valle de Chorröpampa	2. Oso Mayo	425542 / 8921294	2079	Moderate
	3. Palizada	425527 / 8924368	1705	Moderate

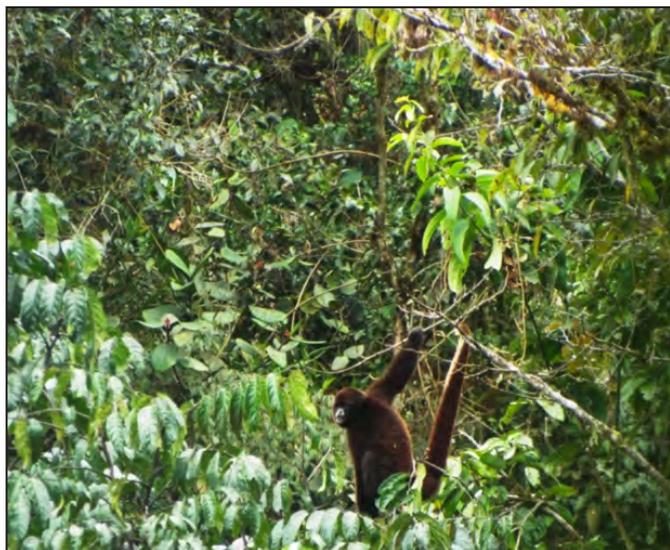
\*Numbers correspond to the survey sites in Figure 1.

while *A. chamek* was observed only below 1,500 m above sea level. With the exception of *C. yuracus*, all other species were recorded just once, which would indicate a low abundance in forests where they share the habitat with *L. flavicauda*. It would be appropriate, however, to conduct surveys in this area in the dry season, to investigate any seasonal differences in abundance.

*Activities that constitute threats*

The main threat in the region is deforestation for agriculture (Fig. 4) and cattle-ranching, affecting forests along the horseshoe between Monopampa and Río Pozuzo, up to 1 km either side of the horseshoe. The collection of firewood and material for house construction also results in deforestation (Fig. 5) that for now is concentrated in the Monopampa

sector, including the Pantano survey site where the road ends. In this sector, patches of residual forest are severely degraded by intense deforestation for the purposes outlined above, the firewood and timber being transported to the towns of Chaglla and Panao to be commercialized in markets and to supply bakeries. Hunting is very sporadic and evidently does not seriously affect *L. flavicauda*. The species hunted are *S. macrocephalus* and *C. yuracus*, and sometimes *Tremarctos ornatus*, that enter the cornfields to feed on immature corn known as “choclo.” They are repelled with firearms, and sometimes killed.



**Figure 2.** Adult male of *Lagothrix flavicauda* observed in the Oso Mayo survey site at 2071 m above sea level.

**Table 2.** Length walked (km) and hours of censusing in each survey site in the study area.

Sectors	Survey sites	Distance walked (km)	Effort (hours censused)
Monopampa	Pantano	40	100
Valle de Chorropampa	Oso Mayo	74	185
	Palizada	99	247
Total		213	532

**Table 3.** Groups of *L. flavicauda* observed between the basins of the ríos Alto Huallaga and Pozuzo.

Groups	Survey sites	Altitude m.a.s.l.	Activity	Group size	Observations
1	Oso Mayo	2071	Locomoción	12	+3 infants
2	Oso Mayo	2270	Locomoción	>8	
3	Oso Mayo	1930	Alimentación	>5	
4	Palizada	2161	Locomoción	>10	
5	Palizada	2010	Alimentación	15	+3 infants

## Discussion

This expansion of the distributional limits of *L. flavicauda* in southern Huánuco takes its range beyond that proposed by Shanee (2011), who indicated the Río Magdalena as the probable limit southward, and also the montane forests of the left bank of the Río Alto Huallaga, as was proposed by Aquino *et al.* (2016).

With the exception of *L. flavicauda*, the species composition of these forests was similar to those reported by Aquino *et al.* (2015) for Miraflores and Santa Ana, both located on the right bank of the Río Alto Huallaga, but was much higher than those in the other census sites, including premontane and montane forests of the regiones San Martín, Huánuco and Amazonas registered by Shanee *et al.* (2013). The absence of *L. flavicauda* between Miraflores and Monopampa (Aquino *et al.* 2015) and the scarcity of *A. chamek* between Monopampa and Libertad (this study) could be related, among other factors, with competition for habitat and food resources. Indeed, there are marked differences in the number of groups observed between the two study areas with similar characteristics in terms of sampling effort; thus, between Miraflores and Santa Ana we reported eight groups of *A. chamek* and none of *L. flavicauda* (Aquino *et al.* 2015), whereas in this study we observed five groups of *L. flavicauda* and only one of *A. chamek*. Another characteristic to note is that all groups of *L. flavicauda* in the study area were observed above 1,900 m, coinciding with the information of the people living in this part of Huánuco, who told us that this primate, known there as “coto negro,” lives in the highest forested elevations in the mountains, while from 1,900 m down they are occupied by *A. chamek* and *L. lagothricha tshudii*, potential competitors of *L. flavicauda*, and that are absent on the left bank of the Río Huallaga, which would explain the presence of *L. flavicauda* even to 1,500 m, as indicated by the records in the microbasin of the Río Chontayacu, where all groups except one were observed between 1,572 m and 1,823 m.

The constant rain and dense fogs during the winter season (January to April) made finding groups of *L. flavicauda* and other primates difficult, due to the noise caused by wind and raindrops on the leaves of trees, and the poor visibility. For now, though, we can indicate that the populations of *L. flavicauda* and other primates that inhabit this part of Huánuco are relatively secure because they are not exposed to hunting and because the patches of primary forest are still relatively

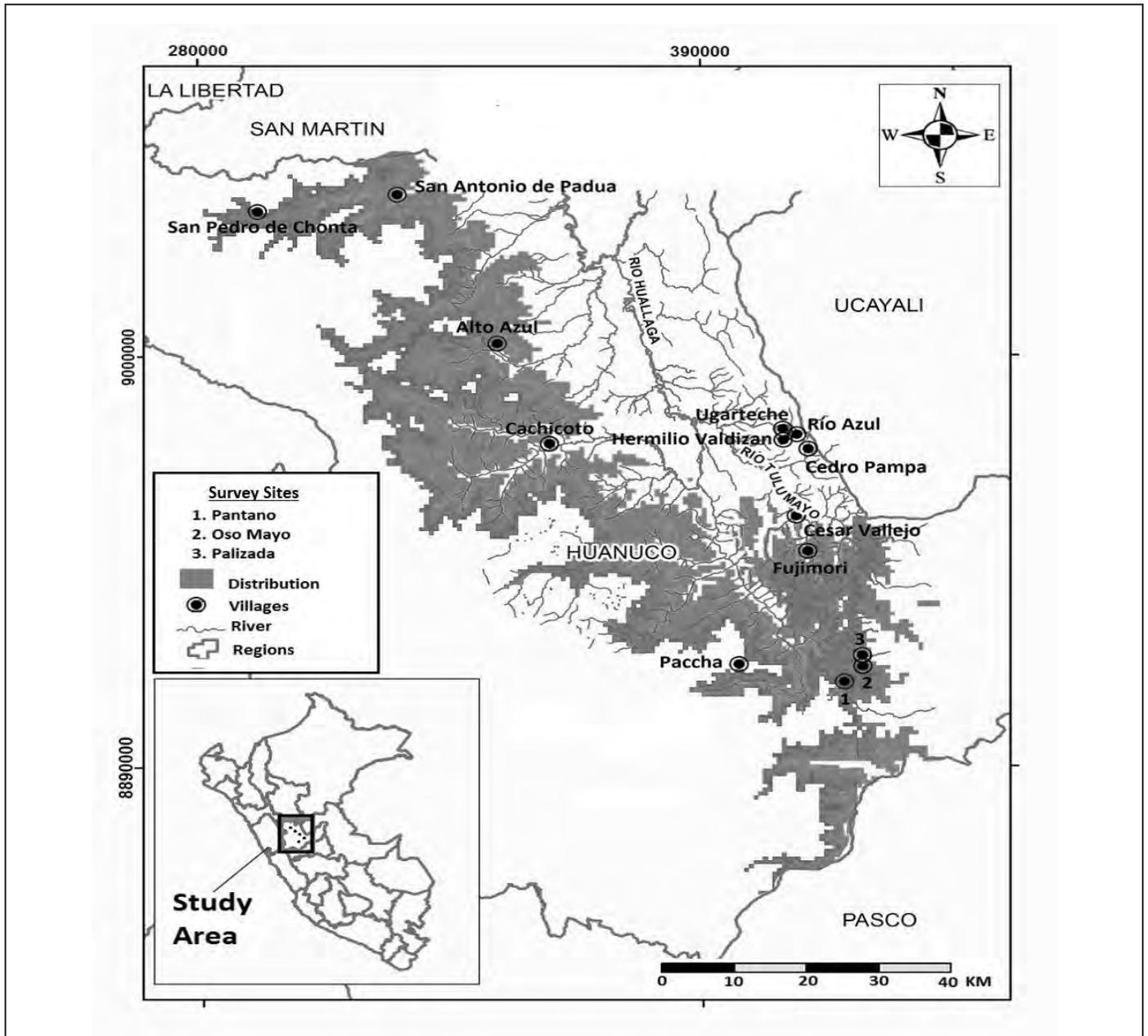


Figure 3. Geographic distribution of *Lagothrix flavicauda* in the Región Huánuco.



Figure 4. Forest replaced by coffee plantations in the Oso Mayo survey site, Sector Chorropampa.

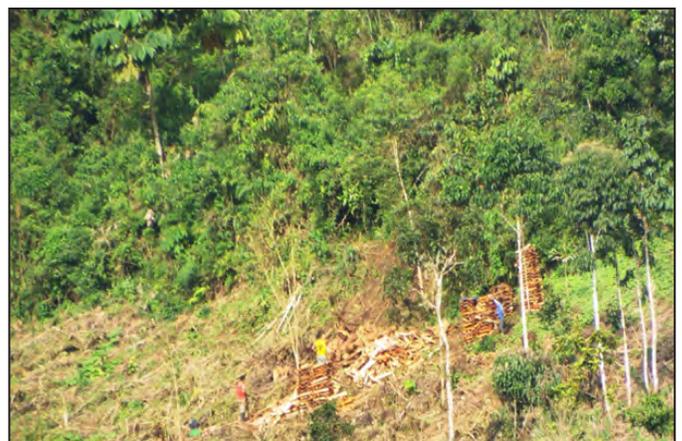


Figure 5. Felling trees for commercial firewood, Sector Monopampa.

large, especially to the north where the largest population of *L. flavicauda* and other species would be found. The situation for these primates could, however, change quickly because of plans to continue construction of the road to connect the basins of the ríos Alto Huallaga and Pozuzo. This would facilitate access by an increased number of settlers, and intensify deforestation for agriculture, livestock and commercial logging. One way to mitigate these threats would be to propose alternatives to the settlers such as the creation of community conservation areas, which could sustain ecotourism, and guarantee the existence of a high diversity of wildlife, including *L. flavicauda* and the other five primates, *T. ornatus*, *Mazama chunyi* and *Puma concolor* among the mammals, *Rupicola peruviana*, *Penelope montagni*, *Andigena hypoglauca* among the birds, and many other species of mammals, birds, amphibians, reptiles and molluscs, many of them probably endemic and new to science.

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