

Primates and the Exploitation of The Upper Ucayali, Peru: Two Site Comparison and the Human Perspective.

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Background

The upper Ucayali River in the Peruvian Amazon is rich in primate diversity, presents various anthropogenic activities and is dominated by indigenous Shipibo. With the increasing exploitation of the Amazon and rainforests worldwide, the role of land ownership and forestry concessions in conservation should be explored and evaluated, considering different economic and sociocultural contexts. In this study, we compared transect data focused on primates and other diurnal mammals in an indigenous Shipibo community's territory and a forestry concession in an unpopulated area where hunting is prohibited. We aimed to investigate primate populations and the differences between sites and measure whether citizen science data can be used as a proxy for wild animal presence and a tool for developing inclusive conservation strategies under both land uses.



Figure 2. Google Earth view of the sites. a) Lush concession; b) PNC community (Google Earth, 2023).

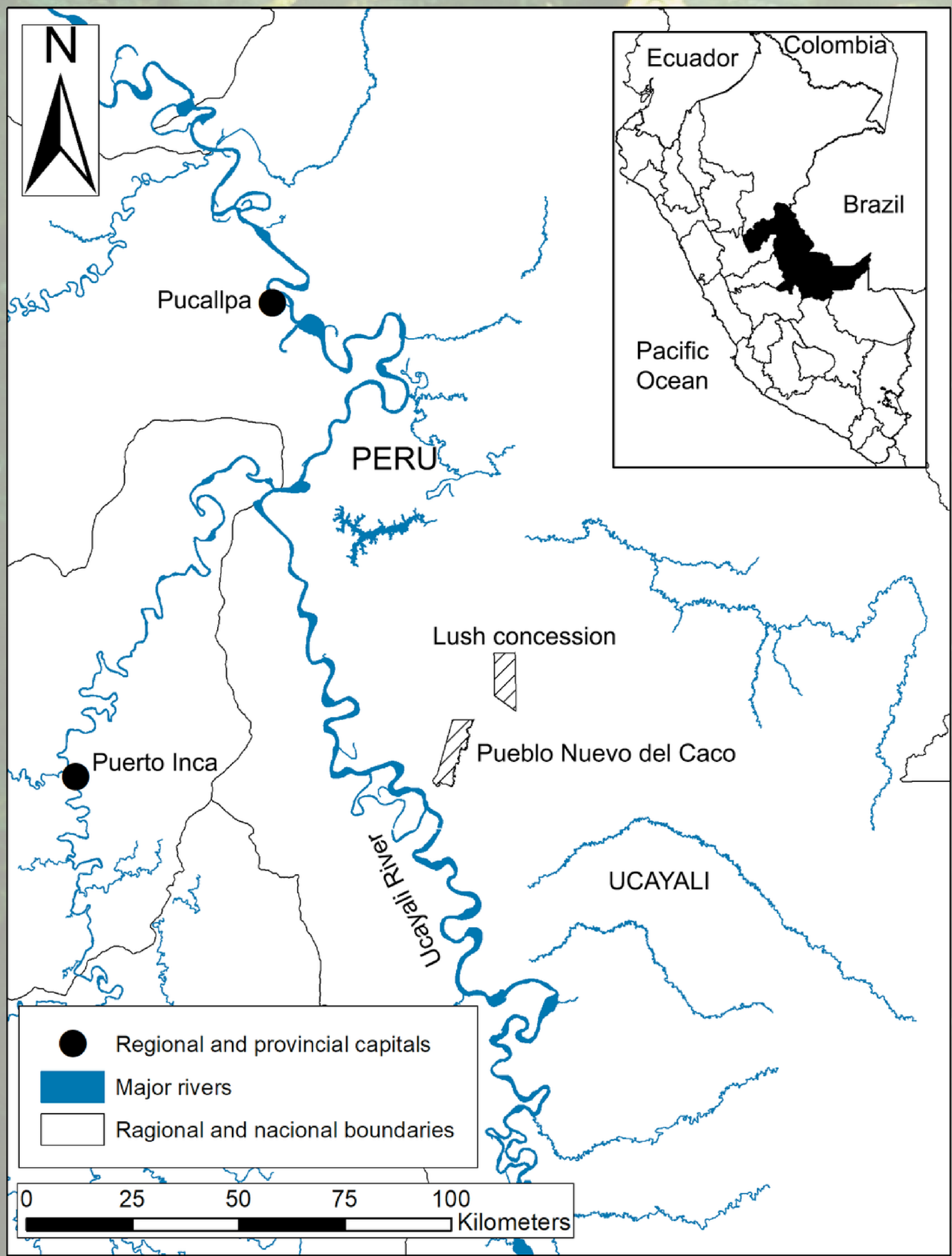


Figure 1. The two study sites in the Ucayali region.

Methods

The study was conducted at two sites, 25km apart, in the Shipibo community of Pueblo Nuevo del Caco (PNC) and an inactive forestry concession owned by Lush UK (Lush) (Fig. 1,2). Line transect surveys focused on diurnal primates and large mammals and were conducted during the dry season between May and July 2022, using existing trail systems at both sites. Sampling effort was 84,000m and 217,000m at the PNC community and the Lush concession, respectively. Encounter rates were calculated as number of detections divided by sampling effort. Salience scores recorded during the study from free listing questionnaires on animal presence and consumption preference were compared to encounter rates from both sites using SPSS. Interviews were conducted in Spanish with strictly indigenous Shipibo participants.

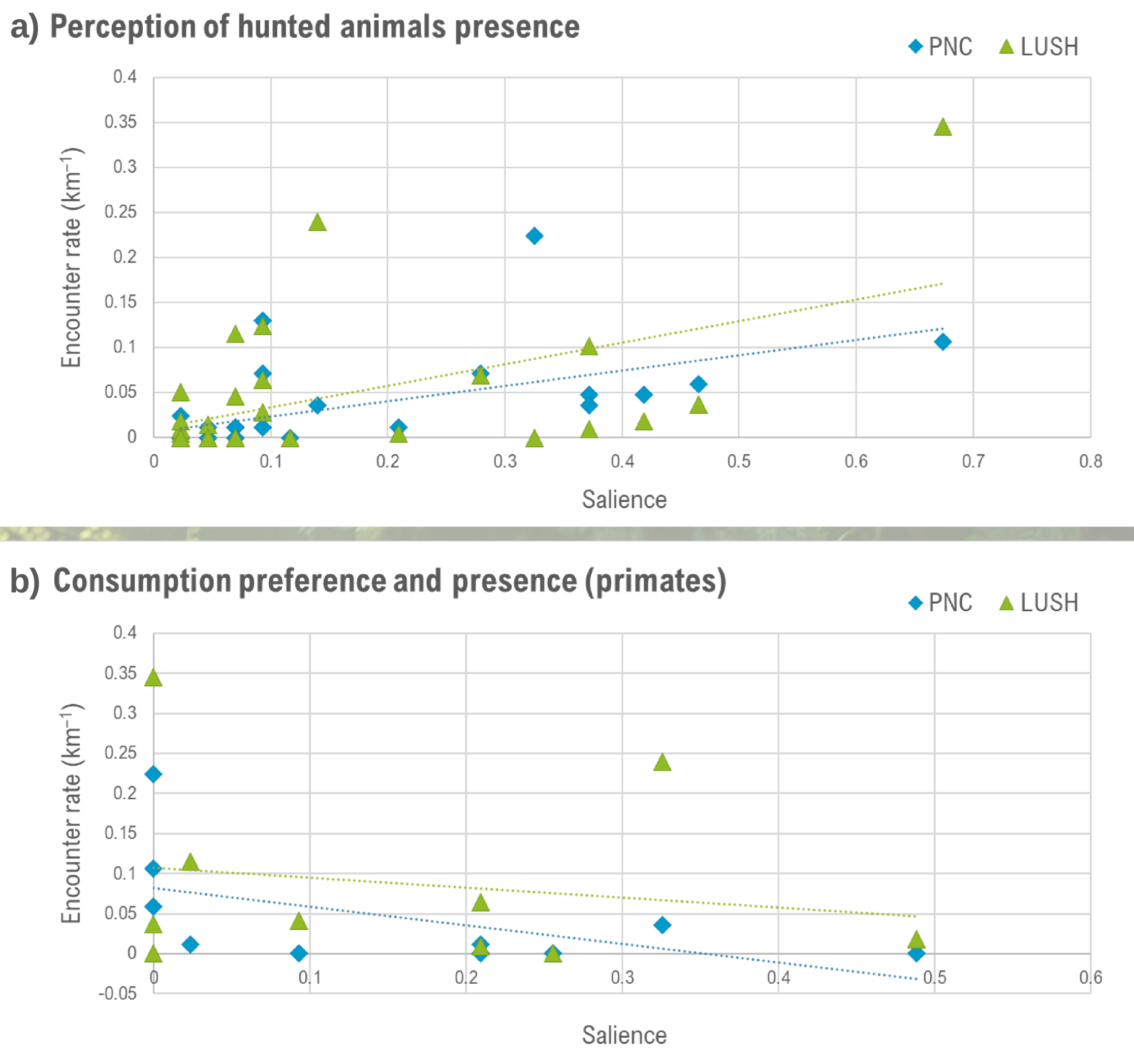


Figure 3. Scatterplot of the relationships between a) animal presence salience and encounter rates in both sites; b) Consumption preference of primates and encounter rates in both sites. Salience = frequency of mention in free listings.

Results

Spearman's rank correlation showed that perceptions of species presence by frequency of mention were positively correlated with encounter rates in PNC [$r(28) = 0.76, p < 0.01$] and in Lush [$r(28) = 0.45, p < 0.05$] (Fig. 3a). The relationship between preferred species for consumption salience to encounter rates was not significant in both PNC [$r(20) = 0.41, p = 0.07$] and LUSH [$r(20) = 0.31, p = 0.1$].

When primate encounter rates and frequencies of mention were analysed separately, we found a negative correlation between encounter rate in PNC to the frequency of mention [$r(10) = -0.69, p < 0.05$]. The same relationship was insignificant for LUSH encounter rates [$r(10) = -0.11, p = 0.7$] (Fig. 3b). Primate encounter rates are listed in Figure 4 and species observed and identified outside transect surveys are listed in Table 1.

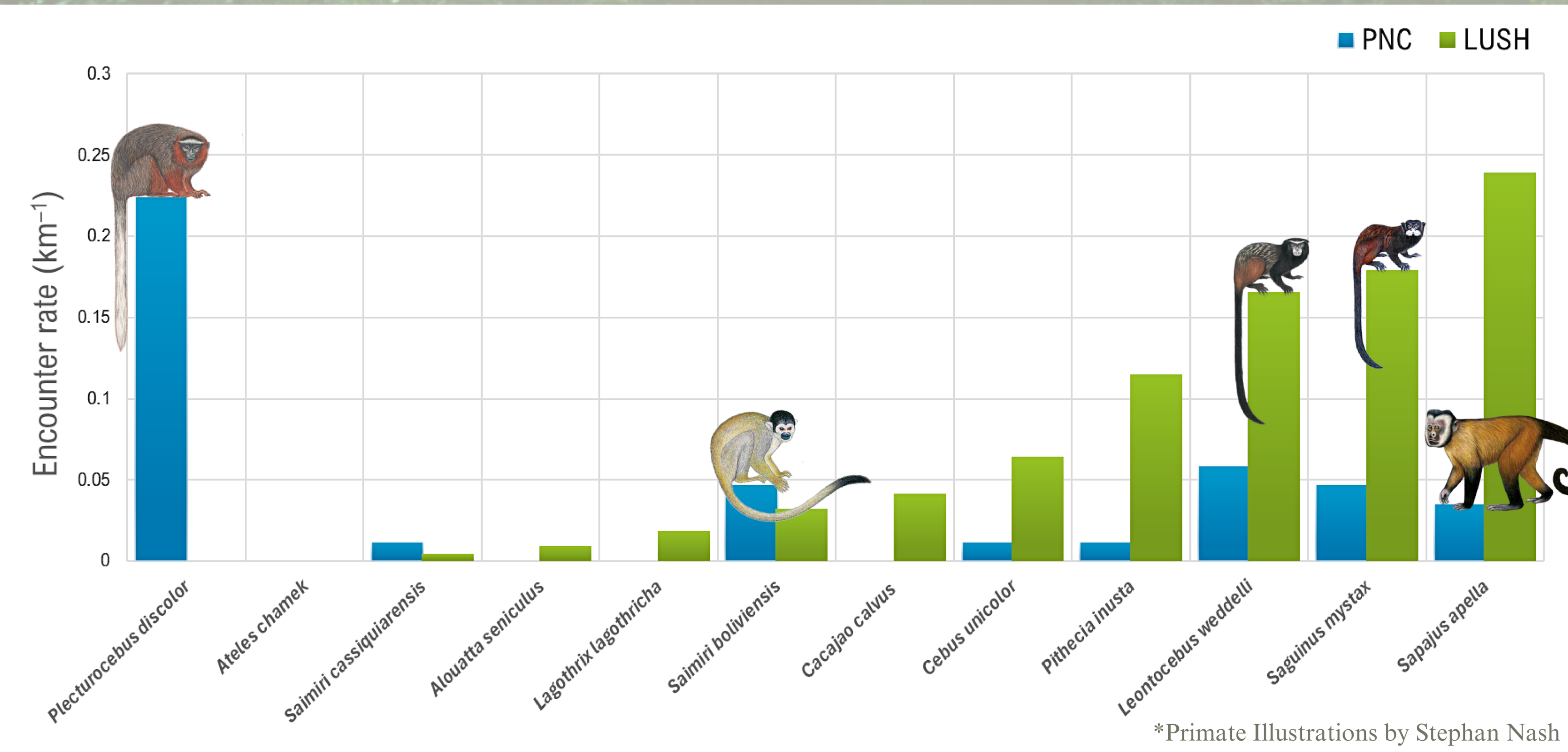


Figure 4. Encounter rates of primate species in the two study sites.

Table 1. Non-transect presence absence of primates.

	LUSH	PNC
<i>Alouatta seniculus</i>	●	
<i>Ateles chamek</i>	●	
<i>Aotus nigriceps</i>	●	●
<i>Cacajao calvus</i>	●	
<i>Cebus unicolor</i>	●	●
<i>Lagothrix lagothricha</i>	●	
<i>Leontocebus weddelli</i>	●	●
<i>Pithecia inusta</i>	●	●
<i>Plecturocebus cupreus</i>	●	
<i>Plecturocebus discolor</i>		●
<i>Saguinus mystax</i>	●	●
<i>Saimiri boliviensis</i>	●	●
<i>Saimiri cassiquiarensis</i>	●	●
<i>Sapajus apella</i>	●	●

Conclusions

These findings are consistent with previous results on primate populations near human settlements in the Amazon, especially the depletion of the more sought-after larger species, and highlight the potential of sustainably managed concessions to serve as a refuge for primate populations and other wildlife. Although hunting in LUSH is prohibited, we found evidence of it and learned from the locals about the challenges of law enforcement in the area, abundant with illegal activities.

- Further research is needed to identify species-specific drivers of primate depletion near forestry concessions and human settlements.
- Expand collaborations with local communities near forestry concessions to promote knowledge sharing and co-management.
- Increase monitoring and law enforcement in forestry concessions of high conservation priority.

In the right hands, private land ownership and forestry concessions can make a difference in primate conservation. With sustainable resource extraction and management, they can prevent overexploitation, biodiversity loss and protect essential habitats.

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