Peruvian Yellow-tailed Woolly Monkey

Oreonax flavicauda (Humboldt, 1812)
Peru
(2000, 2006, 2008)

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The taxonomy of the yellow-tailed woolly monkey has been a matter of some discussion. First described as *Simia flavicauda* by Humboldt in 1812, it was again described by Thomas (1927a) as *Lagothrix (Oreonax) hendeii* a century later. Later in the same year, after receiving a new juvenile specimen, Thomas (1927b) elevated the subgenus *Oreonax* to full generic status. In his revision of the woolly monkeys, Fooden (1963) found that *S. flavicauda* and *O. hendeii* were actually the same species and very closed related to *Lagothrix*, and he thus named it *Lagothrix flavicauda*. Groves (2001) revised some available skulls and found it more closely related to *Ateles*, and consequently separated *flavicauda* from *Lagothrix*, and revived Thomas' old genus *Oreonax*. Most recently, Matthews and Rosenberger (2008a, 2008b) revised Groves' work and found evidence for a "misclassification because a heuristic measure of statistical support has been misconstrued as a biological and phylogenetic characteristic", and therefore argued against the validity of *Oreonax* as a genus. A more comprehensive reassessment of the systematics of *Lagothrix* is still needed, using a wider set of characters and samples, both in morphology and molecular genetics.

The Peruvian yellow-tailed woolly monkey is endemic to Peru, and is found only in a small area in the Tropical Andes. *Oreonax flavicauda* is known to persist only in primary premontane, montane and cloud forest between 1,500 to 2,700 m above sea level (Leo Luna 1982; Butchart *et al*. 1995; DeLuycker 2007; Shanee *et al*. 2008). Historically, the distribution of the species may have included the regions of Amazonas, San Martín, Huánuco, Loreto and La Libertad, as predicted by the species distribution modeled by Pacheco *et al*. (2007). Now the species is restricted to scattered forests in only two regions—Amazonas and San Martín (Heymann and DeLuycker 2007; Shanee *et al*. 2008). There are no current estimates of remaining population numbers. Indiscriminate clear-cutting of primary cloud forest is the principal threat to this species, and its habitat has been largely deforested, resulting in a strongly fragmented landscape.

We estimated the extent of the historical distribution area of *O. flavicauda*, based on a model without taking into account current deforested areas and human settlements, to be 41,446 km^2. In 1981, it was estimated that the potential forested habitat was at least 11,240 km^2 and it was predicted that at least 1,600 km^2 would be deforested for agriculture by 1991 (Leo Luna 1984). With a modeled distribution using known localities and suitable habitat, we estimate the current potential distribution of *O. flavicauda* to be 7,690 km^2, a number that is rapidly diminishing due to a high rate of human immigration to the area, combined with unregulated land use. In addition, most of this forest is now highly fragmented or isolated from other tracts of forest. *Oreonax flavicauda* has likely declined drastically in numbers due to a major reduction in its area of occupancy and a decrease in the quality of its habitat.

Very little is known about the ecology and behavior of the yellow-tailed woolly monkey. Results from studies in the early 1980s indicated that the sizes of its multi-male/multi-female groups range from 5 to 18 individuals. *Oreonax flavicauda* eats a variety of fruits, flowers, leaves, lichens, leaf bases of bromeliads, epiphyte roots and bulbs, and possibly insects (Leo Luna 1982; DeLuycker 2007). Surveys in the Amazonas region found groups ranging from 7 to 10 individuals (Cornejo *et al.* 2007), but DeLuycker (2007) reported an unusually large group (17–20

individuals) in an area relatively close to agricultural plots. The species appears to be very sensitive to habitat alterations (Leo Luna 1987; DeLuycker 2007). Where the forest is disturbed by logging, *O. flavicauda* decreases its use of the area (Leo Luna 1984), often retreating further into high-altitude forests far away from human settlement, where it is able to use larger tracts of forest. In 1981, it was estimated that *O. flavicauda* occurred in low densities, from 0.25 to 1 group per km^2 (Leo Luna 1987). Recently, a survey conducted in a forest fragment provided an estimate of 1-2 groups per km^2 (Cornejo 2007). Based on the difficulty of locating groups of *O. flavicauda* during an intensive 3-month survey, DeLuycker (2007) suspected this species to have large home ranges (as do other atelins), but Cornejo (2008) estimated the home range of a single group as only 69 ha.

The species is known to be present in the Río Abiseo National Park (PNRA) (2,745 km^2), the Alto Mayo Protected Forest (BPAM) (1,820 km^2), and the Reserved Zone Cordillera de Colán (ZRCC) (641 km^2), all of which were established with assistance from the Asociación Peruana para la Conservación de la Naturaleza (APECO). Between 1996 and 2001, more than 6,000 ha of primary forest were cleared inside the BPAM (Peru, INRENA 2008). The forest of the BPAM is now considerably fragmented, a result of lack of enforcement and a substantial human population living in the protected forest itself. The "Reserved Zone" Cordillera de Colán (ZRCC) is finally being categorized as a National Sanctuary and a Community Reserve of Awajun Natives, after many years of being without a formal categorization and a management plan. BPAM and ZRCC also suffer from illegal selective logging—ZRCC has two operative mining concessions near its borders, and both areas have the constant threat of human unregulated migration. *Oreonax flavicauda* has been extirpated from all but the most distant and isolated forests on the eastern side of the Río Alto Mayo. Illegal hunting still occurs within and outside protected areas, and if monkeys are encountered, they are likely to be shot, because of their size, conspicuousness, and trustful behavior toward humans. The species' velvety, thick, long fur, its skin and skull, and yellow genital hair-tuft are sought after as trophy items, and make this species a target for hunters even when they do not hunt it for subsistence. Infants taken when their mothers are shot are sold in markets as pets. PNRA is the only governmental protected area that, because of its inaccessibility, is actually protecting the yellow-tailed woolly monkey. Unfortunately, PNRA is only protecting 852 km^2 of suitable habitat for the species (M. Leo Luna unpubl. data).

There is very little information on the biology and natural history of this species, resulting mainly from the difficulties imposed by the mountainous and precipitous terrain where it lives. A complete, range-wide survey of its cloud forest habitat is urgently needed to develop plans to protect the remaining populations of *Oreonax flavicauda*. These surveys should also include population genetic studies, to examine genetic variability and the viability of existing populations.

Currently, a number of institutions are investing efforts and resources in northeastern Peru's cloud forests. Some community-based conservation projects are underway (Ucumari, Apenheul, Neotropical Primate Conservation [Shanee *et al.* 2007, 2008] and the Museo de Historia Natural – UNMSM in Amazonas.) Protected area policies and management plans are being enforced (APECO and Deutsche Gesellschaft für Technische Zusammenarbeit – GTZ) and private reserves established (Asociación Ecosistemas Andinos, Sociedad Peruana de Derecho Ambiental), and conservation education campaigns are also being held (Yunkawasi). While these conservation efforts have already produced some positive results, they are not enough. The regions of Amazonas and San Martín have the highest rates of deforestation of Peru (Reategui and Martínez 2007)—the product of very deep social conflicts in the area, with illegal logging and illegal land traffic being the main problems.

Urgent conservation initiatives necessary for the yellow-tailed woolly monkey's survival should continue and include: increased protection within designated parks, reserves, and protected forests, which currently lack enforcement; the establishment of a contiguous area of protected forest, to create a biological corridor; control of illegal logging; purchase of land; the provision of alternative economic models for local communities living along buffer zones, in order to prevent further migration into the primary cloud forests; and the implementation of a strong conservation education plan.

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