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Javan Surili : A Survey Population and Distribution in Mt. Slamet Central Java, Indonesia

[SURILI JAWA : SURVEI POPULASI DAN DISTRIBUSI DI GUNUNG SLAMET, JAWA TENGAH, INDONESIA]

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Abstrak. Survei ini adalah penilaian yang pertama terhadap populasi dan distribusi surili jawa (*Presbytis fredericae*) di Gunung Slamet, Jawa Tengah, Indonesia. Survei telah dilakukan selama 150 hari di hutan pegunungan dan menyusuri jalur-jalur yang ada sepanjang 125,38 km. Survey ini telah mencatat 233 individu dari 54 kelompok monyet surili. Metode garis transek telah diterapkan dalam survey ini dan estimasi kerapatan surili jawa adalah 5,6 – 8,16 individu/km^2, yang menempati 198.68 km^2 potensial habitat. Estimasi populasi surili jawa di Gunung Slamet kurang lebih 1172 – 1621 individu. Perburuan, penebangan liar, pengumpulan kayu bakar, perburuan tanaman hias adalah ancaman yang menyebabkan degradasi habitat surili jawa di hampir semua lereng gunung. Ini adalah sub-populasi terbesar yang tersisa di jawa tengah, jadi perlindungan terhadap Gunung Slamet adalah sangat penting untuk menyelamatkan populasi monyet dan habitatnya, sebagaimana kita ketahui bahwa distribusi *sub-species Presbytis* di jawa tengah tidak terdapat di dalam kawasan konservasi. Peningkatan status perlindungan hutan, penegakan hukum, program kesadaran konservasi, pemberdayaan komunitas harus didukung dan diteruskan di Gunung Slamet.

Abstract. This survey is the first assessment of the population and distribution of the Javan surili (*Presbytis fredericae*) on Mt.Slamet, Central Java, Indonesia. The survey was carried out for a total of 150 days in the mountainous forest, while walking 125.38 km along existing trails. There were 233 individuals recorded, belonging to 54 groups of monkeys. The line transect method was applied during the survey and it was estimated that there were 5.6 up to 8.16 individuals/km^2 density of Javan surili, occuping 198.68 km^2, indicating a possible potential habitat. The population of the Javan surili on Mt.Slamet was estimated at approximately 1172 – 1621 individuals. Hunting, illegal logging, fuel wood collection, ornamental forest plants gathering were threats which were the cause of massive degradation of the Javan surili habitat across the facing slope. With its largest sub-population remaining in Central Java, protecting the Mt. Slamet is urgently needed to save this monkey population and its habitat, as it is known that there is no conservation area in the range distribution of Presbytis subspecies in Central Java. Increasing the forest protection status, law enforcement, conservation awareness programs, and community based empowerment should be supported and continued in Mt. Slamet.

Key words: *rekrekan, surili, Mt.Slamet, population, distribution, endangered*

Introduction

Presbytis fredericae Sodi (1930) is found in the central part of Java Island. Until now, the taxonomy of this *Presbytis* is still debated. *Presbytis fredericae* of Central Java was proposed to be a distinct species (Brandon-Jones 1995, Brandon-Jones *et al*. 2004) but another recent study suggested that all Javan surilis should be treated as a single species (Nijman 2001). This has been followed in the latest assessment on the IUCN Red List, where *Presbytis fredericae* is treated as a synonym for *Presbytis comata* (Nijman and Richardson 2008). It has been classified as endangered in the list. Here, Brandon-Jones taxonomy's was followed in treating javan surili (*Presbytis fredericae*) as distinct species, although it is acknowledged that this should be still considered as tentative.

The javan surili has so far received little attention among researchers and conservationists. Habitat within its distribution range have been threatened by human habitat utilization. While some populations of *Presbytis comata* in Western Java have already been protected within national parks and conservation areas, there are no internationally recognized conservation areas that would protect the surili's sub species in Central Java. Only two field survey and one undergraduate research had been conducted on this species during two last decades in the central Java region, mainly in the Dieng Mountain area (Nijman 1997a; Nijman and van Balen 1998; Setiawan 2003), where animal density was estimated to be 28 individuals/km^2, and total population size around 700 – 800 animals. Nijman (1997a) has visited Mt. Slamet, but population

estimates for this area were not available. This is the first population and distribution survey in Mt. Slamet to provide baseline data for further conservation of the species in Central Java.

Methods

This study was carried out in Mt. Slamet, Central Java Province, Indonesia, the second highest mountain in Java, with an average rainfall of 5000-6174 mm/year and a temperature of 20-30 ^{o}C (Central Java Forestry Agency 2010). Even though there are no available specific assessments on habitat, observation on the changing habitat are based on vegetation composition along gradient elevation of Mt. Slamet. Secondary species such as *Macaranga* sp., and *Trema* sp. are dominates at the elevation 800 m asl up to 1000 m asl, and mountainous tree species belonging to *Fagaceae* family such as *Quercus* and *Lithocarpus* are the dominant species in elevation between 1000 up to 2500 m asl .

The main method for this survey was as silent as possible walking and waiting in the forest, mostly on the forest trails established by local villagers. Due to the mountainous landscapes and inaccessible forest in Mt. Slamet, we established several camps in the forest. New trails were also undertaken, and avoiding trails which were usually used for climbing the mountain due to the high intensity of human activities. There are several villages that we used as main camps during the field work such as at Curug Cipendog on the south-west slope, Curug Gomblang and Pancuran Pitue on the southern slope, Gunung Tukung and Gunung Malang on the north-east slope, and Gunung Suci on the north-west slope of Mt. Slamet (Figure1). *The line transect method* was applied (NRC 1981 and Whitesides 1995) to estimate the density. The surveys were done by walking slowly (1 km/hour), and stoped for several minutes to locate branch shaking and sounds of the monkeys. A local guide and two observers walked together, while most of the field work started at 06.00 till 17.00, with a break at noon (12.00 till 14.00). The number of individuals, age class, and distance of monkey to observer were recorded in prepared worksheets. GPS was used to record points where the monkeys were seen. The behavior of the primates were observed *ad-libitum*, food items consumed by

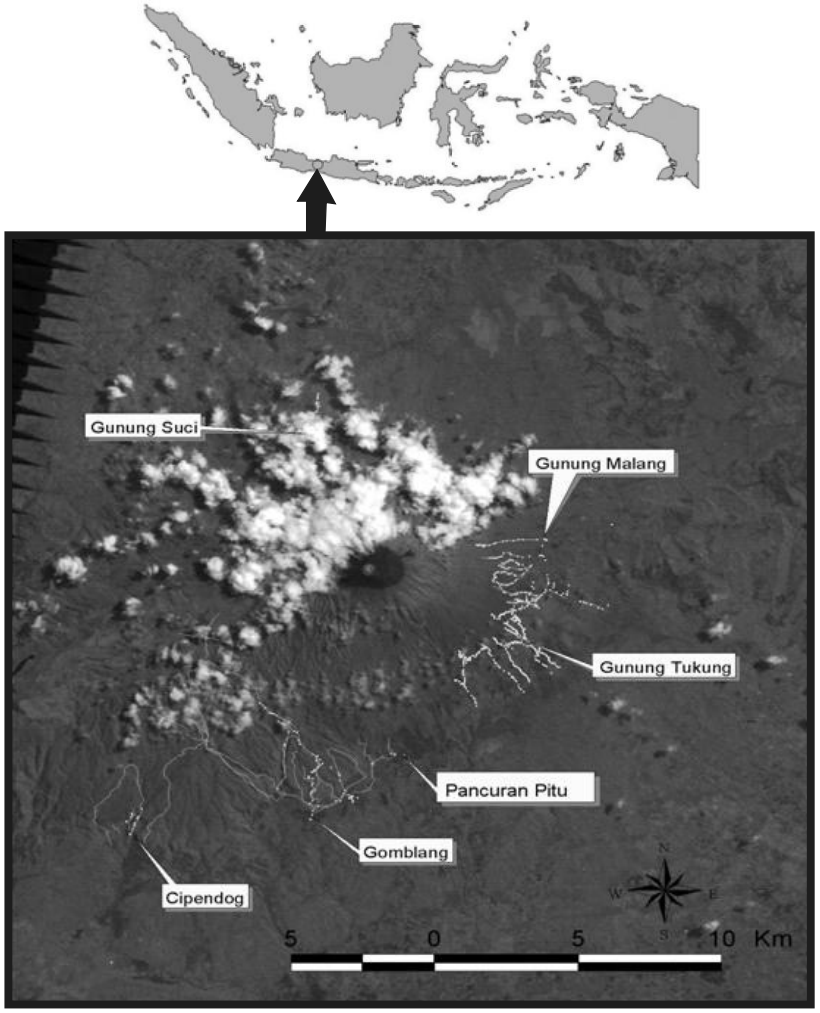

Figure 1. Study site and trails walked in Mt.Slamet

the monkeys as food resources were recorded by their vernacular name. Data were collected during each month in June 2005, August 2006, December 2006, November 2007 and February 2008, and field surveys were done in 150 days.

Results and Discussion

A total of 125.38 km of forest trails were walked in Mt. Slamet. The survey results are presented in Table 1 (Density estimate, efforts, group size of Javan surili in four different locations in Mt. Slamet) separately for each of the four localition. Altitudinal distribution of *Presbytis fredericae* in Mt. Slamet varied between 750 m asl to 2500 m asl, the largest group size were 14 individuals found at the eastern slope of Mt. Slamet, while the smallest group size were 2 animals. Correlation test on the number of individuals and elevation showed negative relationship between abundance along elevation gradient of Mt. Slamet, however these were not significantly different (rho : -0.162, S = 25686.50, p-value = 0.2552).

Nevertheless, the taxonomic debate on the Javan surili in Java, information on population and distribution are the most essential data for conservation of this endangered leaf eating monkey. Our density estimation was 5.6 individuals/km^2 at the southern slope and 8 individuals/km^2 at the eastern slope of Mt. Slamet. These densities were lower than in Mt. Dieng, 28 individuals/ km^2 (Nijman and Van Balen 1998), while previous *Presbytis* survey in Java recorded 25 individuals/ km^2 in Mt. Gede (Sujatnika 1992) and 11 individuals/km^2 at Kamojang (Ruhiyat 1983 in Nijman 2001). The distribution occupied not only at the edge but also inside the forest, and probably due to vegetation as food resources are changing along gradient elevation, the density also appeared lower at higher elevation. Negative correlations was shown on higher elevations of Mt. Slamet and the monkey abundance was also decreasing, probably due to habitat and environmental factors such as temperature, humidity, air stream are diversity along gradient elevation of Mt. Slamet. The monkeys also can be found in the habitat of forest plantation (*Agathis* and *Pinus*), where food resources was not higher than in the natural forest. This was observed at the old forest plantation (more than 20 years old) where food resources such as liana, and strangling figs, were available among plantation trees.

Local people around Mt. Slamet actually recognized all the primates in their forest, *Rekrekan* is the vernacular name for the javan surili, *owa* for javan gibbon, *lutung* for the javan silvered leaf monkey/javan langur, and *kethek* for the longtailed macaque. It is recognized that these primates are protected by Indonesian law, however enforcement are still to be concerned. Hunting for javan surili occurred, eventhough not specific to find the primates, and it seems to tend to opportunistic hunting, where hunters who were not finding any animals, would catch any animals, whatever they got. A case of hunting occurred during field work at the eastern slope of Mt. Slamet, where the javan surili was shot and eaten for the meat. Hunting for pets was also recorded based on interview with villagers at the southern slope of Mt. Slamet, but this trade can't be found in the open market, and only an order by a buyer from the nearest city such as Purwokerto. A juvenile javan surili was sold for 250,000 IDR.

Habitat degradation have obviously happened at all slopes of Mt. Slamet. Forest plants hunters by villages looking for ornamental plants such as orchids and pitcher plants causing a lot of forest trees that were cut down. Illegal logging happened more seriously at the southern slope of Mt. Slamet, not only for villagers building materials but also some of the illegal loggers selling the logs commercially. At the eastern and western slopes of Mt. Slamet it was observed that during the dry season people were more active to go into the forest for fuel wood collection. Conflicts between monkeys and villagers were recorded at the eastern slope where the monkeys foraged in vegetable fields to find food such as cassava, and other fruits and vegetable plants, while at the southern slope there were groups foraging in plantation. It has been noted that these monkeys also become crop raiders (Marchal and Hill 2009).

Table 1. Density estimate, efforts, group size of Javan surili in four different locations in Mt. Slamet

Location, Year	Distance walked (km)	# Groups / individuals encountered	Group size, (average, range)	Density (indv/km^2)
Curug Cipendog, 2005	36.65	13 / 80	6.1 (2-6)	5.9
Curug Gomblang, 2006	39.36	22 / 65	2.9 (2-7)	5.6
Gunung Malang, 2007	16.04	7 / 39	5.6 (2-14)	5.9
Gunung Tukung, 2008	33.33	12 / 49	4.1 (2-6)	8.16

Conclusion

Landsat 2001 satellite imagery analysis was used to assess area of the remaining habitat for Javan surili in Mt.Slamet. Which was and there are approximately 198.68 km^2 for potential habitat, with range density 5.9 - 8.16 individuals/km^2 for population estimation, while a rough number would be 1172 – 1621 individuals in the whole of Mt. Slamet. However, it should be noted that maybe individual density will vary based on habitat chance on the elevation. Thus more detailed studies are needed the largest sub-population may be remaining in Central Java. Therefore protecting the Mt. Slamet is urgently needed to save these monkey population and its habitat, since we know that there is no conservation area in the range distribution of *Presbytis* subspecies in Central Java. Increasing forest protection status, law enforcement, conservation awareness programs, and community based empowerment should be supported and continued in Mt. Slamet.

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