

CITES Proposal Highlights Rarity of Asian Nocturnal Primates (Lorisidae: *Nycticebus*)

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In June 2007 the Asian slow lorises, genus *Nycticebus*, will be put forward by Cambodia at the 14th Conference of Parties to be transferred from Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) to Appendix I. Appendix II allows trade, albeit regulated, whereas Appendix I will preclude all international commercial trade in the genus [CITES, 2007]. At present capture for trade is rampant and unregulated [Schulze and Groves, 2004]. The large volume of trade has led to the conclusion that *Nycticebus* species are not common enough to withstand the current level of off-take, being the number one protected species encountered during many in-country animal market surveys [Malone et al., 2002; Harris, 2003; Webber and Nekaris, 2004; Shepherd et al., 2005]. In order to qualify for listing in Appendix I of CITES, the CITES listing criteria require that the wild population is small, has a restricted area of distribution or has suffered a marked decline in the population size in the wild. Other than those from the trade, few data have been published from wild populations that can be presented to support the transfer from Appendix II to I.

Until recently, slow lorises were considered a single highly polymorphic species, ranging from northern India to China and Vietnam, south to the Malay Peninsula, and into western Indonesia and the southern Philippines [Groves, 1971, 1998]. In Cambodia's proposal [CITES, 2007], three species are listed, whereas recent and on-going research shows that slow lorises in fact comprise a minimum of five cryptic species, differing in dentition, morphology, and genetic make-up [Roos, 2003; Brandon-Jones et al., 2004; Chen et al., 2006; Nekaris et al., 2006]. At an IUCN Red List Primate Specialists Group Conservation Assessment and Management Plan (CAMP) in Cambodia in September 2006, these five species were individually assessed as Vulnerable or Endangered on the basis of continuing habitat loss alone. The three-species approach can have a drastic impact on the conservation status of *Nycticebus*, underestimating threats in terms of habitat loss and the impacts of the trade.

Before permitting exports of species listed in Appendix II of CITES, each national government within a species' range is required to determine that trade is not detrimental to the species' survival or to the ecosystem in which it occurs – in effect, to confirm that the species has been harvested at a sustainable level [Vonk and

Table 1. Encounter rates with four species of slow loris in South and Southeast Asia, in sites where the species was confirmed to be present at the time of the survey

Species	Study area, country	Lorises (low-high estimate) n	Effort (low-high estimate) km	Encounter rate lorises km ⁻¹ km
Greater slow loris <i>N. coucang</i>	Tekam, Malaysia ¹	142–183	155–175	
	Tekam, Malaysia ²	54	60	
	Pasoh, Malaysia ²	1	59	
	Bukit Kiara, Malaysia ³ combined	10 207–248	40 314–334	0.66–0.74
Bengal slow loris <i>N. bengalensis</i>	Assam, India ⁴	7–10	95	
	Phou Xang He, Laos ⁵	25	46–89	
	Ben En, Vietnam ⁶ combined	0 35	100–160 249–329	0.10–0.13
Bornean slow loris <i>N. menagensis</i>	Danum, Malaysia ⁷	1	50	
	Sebangau, Indonesia ⁸ combined	12 13	60 110	0.12
	Phou Xang He, Laos ⁵	4	46–89	
Lesser slow loris <i>N. pygmaeus</i>	Ben En, Vietnam ⁶	8	100–160	
	combined	12	130–210	0.05–0.08

Data were included on those species for which the combined survey effort was at least 100 km; this led to the exclusion of the Javan slow loris *N. javanicus*. Surveys from cars were excluded. Data on the number of lorises encountered and survey effort were extracted from the studies or estimated using data provided in the study, from which we calculated encounter rates. When densities were reported in lorises km⁻² these were transferred to numbers using detection distances and survey effort provided by the authors.

¹ A.D. Johns, in litt. 2007 [in Barrett, 1984, pp. 187–210].

² Barrett [1981, 1984].

³ Shepherd and Nijman [2006, unpubl. results].

⁴ Radhakrishna et al. [2006].

⁵ Duckworth [1994].

⁶ Fitch-Snyder and Vu [2002].

⁷ A.D. Johns, in litt. 2007.

⁸ Nekaris et al. [2007, unpubl. results].

Wuester, 2006]. Given their nocturnal lifestyle, it is perhaps not surprising that little is known about the abundance or distribution patterns of these small primates [Nekaris and Bearder, 2007]. Furthermore, lack of discrimination in the trade due to the species' similar appearance, combined with unresolved taxonomic issues, impedes assessing each taxon's potential vulnerability to trade [Schulze and Groves, 2004; Vonk and Wuester, 2006].

Due to the lack of data from wild populations, status assessments [e.g. Supriatna et al., 2001; Molur et al., 2003] have relied on two published studies on greater slow lorises (*Nycticebus coucang*). These studies were conducted at sites that were specifically chosen for their high abundance of lorises [Barrett, 1984; Wiens, 2002]. Using data from these sites and this species only is not likely to be an accurate assessment of slow lorises throughout their range. We reviewed the literature on slow lorises, and found that many data are available regarding their distribution and abundance, but are not available in easily accessible publications. In order to investigate whether or not slow lorises are truly widespread and abundant, we consoli-

dated data from various studies and surveys conducted between 1979 and 2005 on four species of slow loris (table 1).

Eleven studies where slow lorises were surveyed and seen were compared. Combined, the surveyors covered some 800 km on foot, either on permanent transects, or following paths in the forest in sites where species were confirmed to be present. During the 500 nights in the forest, 300 lorises were sighted, giving an overall encounter rate of about 1 loris for every 3 km of transect covered. Marked differences, however, occurred between species. Encounter rates of greater slow loris *N. coucang* in Malaysia were 5–15 times higher than those of Bengal slow loris *N. bengalensis* in India, Laos and Vietnam, Bornean slow loris *N. menagensis* in Borneo, and lesser slow loris *N. pygmaeus* in Laos and Vietnam. It appears that greater slow lorises *N. coucang* can be observed on average once every 1.5 km, but, again on average, for the other species at least 8–14 km must be surveyed to yield a single sighting. Consolidation of these studies for the first time provides unequivocal evidence that slow lorises seem to be genuinely rare in a large part of their range. Their rarity is further supported by researchers who have surveyed extensively (up to 2 years) without seeing a single loris [e.g. Barrett, 1984: Malaysia; Zhang et al., 1992: China; A.D. Grieser-Johns, pers. commun.: Vietnam; S. Lhota, pers. commun.: Borneo; A. Miehs, pers. commun.: Sumatra; C. Starr, pers. commun.: Cambodia].

Our literature review revealed that low encounter rates are often attributed to the nocturnal nature of the animals or observer technique, rather than low abundance of the animals [Duckworth, 1998; but see Radhakrishna et al., 2006]. This is usually reflected by researchers choosing to note that lorises are present or absent rather than reporting very low density estimates, perpetuating the belief that they are common [Duckworth et al., 1999]. We urge workers in Southeast Asia, and especially those that do spend time surveying nocturnal animals, to invest more effort in collecting data on slow lorises in order to better our understanding of the real abundances and distribution patterns amongst the species. We also urge those who have unpublished data on these species to make them available to the authors before June 2007 so that these data can inform the discussion at the CITES conference.

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