

Status reassessment of the gibbons: Results of the Asian Primate Red List Workshop 2006

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The status of East Asian primate taxa was reassessed for the IUCN Red List at a workshop held from September 8 - 12, 2006, in Phnom Penh, Cambodia. This paper presents the results for the gibbons or small apes, and summarizes the resulting new information on their taxonomy, geographic range, population size, major threats, conservation measures, and conservation status using IUCN Red List categories and criteria. A comparison of the new assessment with the previous ones of 2000 (or 2003 for two gibbon species) reveals that 10 of 16 species and 9 of 12 subspecies – i.e. 86% of all gibbon taxa – have become more endangered within the last three to six years by at least one category of threat, and 39% of all gibbon taxa by two categories.

Introduction

The World Conservation Union's Red List of Threatened Species (IUCN, 2006) presents a comprehensive review of the status of the world's fauna. In order to reflect the changing status of, and threats to, animal species and subspecies, this databank requires periodic re-evaluation. One of a number of information-gathering workshops was organized to reassess the Asian primates Red List. Held over the course of five days from September 8-12, 2006, in Phnom Penh, Cambodia in partnership with the IUCN/SSC Primate Specialist Group, the IUCN Global Mammal Assessment (GMA), and the Southeast Asia Mammal Databank Project of the Istituto di Ecologia Applicata of Rome University; the latter brought together experts on such diverse areas as taxonomy, distribution, threats on the ground, and conservation actions, in order to help review the data and conduct IUCN Red List assessments. The workshop built off of the extensive existing data on the region's primates, with the goal of bringing in new knowledge, expertise, and technology in the hope that this information will make a significant contribution to the conservation of Asian primates, as well as help set a benchmark in our knowledge of these taxa. The fully referenced results from the workshop will be made freely and publicly available on the web, in keeping with IUCN policy.

This paper summarizes the workshop's results for the gibbons or small apes. It should be noted that the new Asian Primate Red List data presented in this paper will not be official before it will be posted on the web by IUCN. The next Red List will come out in 2008, because submissions to the Red List are only made in February of each year (Jan Schipper, pers. comm.).

Assessors of the gibbon status reports

Noviar Andayani, Bill Bleisch, Warren Y. Brockelman, Thomas Geissmann, Nguyen Manh Ha, Long Yongcheng, Vincent Nijman, Ben Rawson, Matt Richardson, Jatna Supriatna, Carl Traeholt, Rob Timmins, Joe Walston, Danielle J. Whittaker, Jiang Xuelong, with additional contributions by Colin P. Groves, Saw Htun, Eric Meijaard, Sanjay Molur.

Species assessed and taxonomic notes

The gibbon species assessed and the countries in their distributional range are listed in Table 1. A total of 16 gibbon species are recognized here, of which three are divided into a total of 12 subspecies. The classification used largely follows Groves (2001), with the following taxonomic notes explaining any departures from that source or ongoing taxonomic uncertainties.

Hoolock hoolock and *H. leuconedys*: The previous generic name for hoolock gibbons, *Bunopithecus*, was changed by Mootnick and Groves (2005) to *Hoolock*, Haimoff *et al.*, 1984. *Hoolock leuconedys* has traditionally been regarded as a subspecies of *H. hoolock*. It is recognized here as a full species based on distinct features in fur colouration described in Groves (1967, 1972).

Hylobates agilis: There is debate on the validity of subspecies. The general consensus seems to be that this species is monotypic, though some experts recognize two subspecies – *H. a. agilis* to the west, and *H. a. unko* to the east – which may possibly correspond with “mountain” and “lowland” forms. All this is not to be confused with the two main colour morphs found throughout the species' range, though in general the pale morph is more common in the Barisan Range of Sumatra, while the dark morph predominates in the eastern lowlands and in the Malay Peninsula (Marshall and Sugardjito, 1986).

Table 1. Taxonomy used in this assessment. – Die in dieser Beurteilung verwendete Taxonomie.

Species		Countries
Western hoolock gibbon	<i>Hoolock hoolock</i> (Harlan, 1834)	Bangladesh, China (not verified), India, Myanmar
Eastern hoolock gibbon	<i>Hoolock leuconedys</i> Groves, 1967	China (not proven), India, Myanmar
Agile gibbon	<i>Hylobates agilis</i> F. Cuvier, 1821	Indonesia, Malaysia, Thailand
Bornean white-bearded gibbon	<i>Hylobates albibarbis</i> Lyon, 1911	Indonesia
Kloss's gibbon	<i>Hylobates klossii</i> (Miller, 1903)	Indonesia
White-handed gibbon, Lar gibbon	<i>Hylobates lar</i> (Linnaeus, 1771)	China, Indonesia, Laos, Malaysia, Myanmar, Thailand
Subspecies:	<i>H. l. lar</i> (Linnaeus, 1771) <i>H. l. carpenteri</i> Groves, 1968 <i>H. l. entelloides</i> I. Geoffroy, 1842 <i>H. l. vestitus</i> Miller, 1942 <i>H. l. yunnanensis</i> Ma and Wang, 1986	
Silvery gibbon, Javan gibbon	<i>Hylobates moloch</i> (Audebert, 1797)	Indonesia
Mueller's gibbon, Bornean gibbon, grey gibbon	<i>Hylobates muelleri</i> Martin, 1841	Brunei, Indonesia, Malaysia
Subspecies:	<i>H. m. muelleri</i> Martin, 1841 <i>H. m. abbotti</i> Kloss, 1929 <i>H. m. funereus</i> I. Geoffroy, 1850	
Pileated gibbon	<i>Hylobates pileatus</i> Gray, 1861	Cambodia, Laos, Thailand
Western black crested gibbon	<i>Nomascus concolor</i> (Harlan, 1826)	China, Laos, Vietnam
Subspecies:	<i>N. c. concolor</i> (Harlan, 1826) <i>N. c. furvogaster</i> Man and Wang, 1986 <i>N. c. jingdongensis</i> Ma and Wang, 1986 <i>N. c. lu</i> Delacour, 1951	
Yellow-cheeked crested gibbon	<i>Nomascus gabriellae</i> Thomas, 1909	Cambodia, Laos, Vietnam
Hainan crested gibbon	<i>Nomascus hainanus</i> Thomas, 1892	China
Northern white-cheeked crested gibbon	<i>Nomascus leucogenys</i> Ogilby, 1840	China, Laos, Vietnam
Cao-Vit crested gibbon, Eastern black crested gibbon	<i>Nomascus nasutus</i> Künckel d'Herculeis, 1884	China, Vietnam
Southern white-cheeked crested gibbon	<i>Nomascus siki</i> Delacour, 1951	Laos, Vietnam
Siamang	<i>Symphalangus syndactylus</i> (Raffles, 1821)	Malaysia, Indonesia, Thailand

Hylobates lar: The validity of *H. l. yunnanensis* as a subspecies is doubtful; it requires comparison with *H. l. carpenteri* (Groves and Geissmann, pers. comm.). The only geographically well-separated subspecies is *H. l. vestitus*, which is found on Sumatra.

Hylobates moloch: Though it has been suggested that there is evidence for two genetically distinct silvery gibbon populations (Andayani *et al.* 2001), leading to the subsequent recognition of two subspecies by several authors (Hilton-Taylor, 2000; IUCN, 2006; Supriatna, 2006; Supriatna and Wahyono, 2000), a recent review of the molecular evidence and a comparison of morphological and vocal data casts doubt on this claim (Geissmann *et al.*, 2002a; Geissmann, unpublished data).

Nomascus concolor: All currently recognized subspecies of *N. concolor* were described based on small samples. The reported differences among these taxa are questionable, and further research may show *N. concolor* to be monotypic (Geissmann, 1989; Geissmann *et al.*, 2000).

Nomascus gabriellae and *N. siki*: The distributional limits of these species are still unclear, especially with regard to each other. The identity of the crested gibbons occurring in a large area

encompassing parts of central Vietnam, southern Laos and northeastern Cambodia is uncertain, as these differ in their song from both *N. gabriellae* in the south and *N. siki* in the north, but phenotypically resemble *N. gabriellae* (Geissmann *et al.*, 2000; Konrad and Geissmann, 2006; Geissmann, unpublished data). Here, gibbons that, at least phenotypically (i.e., fur colouration) look like *N. gabriellae* are included in this species. Phenotype information for the type locality of *N. siki* (Thua Luu, Thua Thien Hue Province, central Vietnam) is contradictory (Geissmann *et al.*, 2000), but these gibbons are tentatively identified as *N. gabriellae* here. According to Delacour (1951) and (Groves 1972), *N. gabriellae* may possibly interbreed with *N. siki* in Saravane and Savannakhet, Laos (but see Geissmann *et al.*, 2000, pp. 49 and 82).

Nomascus hainanus has been variously considered either as a species in its own right or as a subspecies of *N. concolor* or *N. nasutus*; it is here recognized as a distinct species based on differences in vocalizations and fur colouration (Geissmann, pers. comm.).

Nomascus nasutus has been variously considered either as a species in its own right (sometimes as conspecific with *N. hainanus*), or as a

subspecies of *N. concolor*; it is here recognized as a species distinct from *N. hainanus* and *N. concolor*, based on differences in vocalizations and fur colouration (Geissmann, unpublished results).

Geographic range

Reviews of the respective geographic ranges of most taxa can be found in earlier publications (Geissmann, 1995; Geissmann *et al.*, 2000; Groves, 1972, 2001; Marshall and Sugardjito, 1986). Recent findings include:

Das *et al.* (2006) reported the discovery of a population of *Hoolock leuconedys* in Arunachal Pradesh, India, which has traditionally been considered to be part of the distribution area of *H. hoolock*. As a result, gibbon populations in south-eastern Tibet and Arunachal Pradesh east of Dibang and Lohiton to the west are yet to be determined.

In China, *Hylobates lar* is currently known only from Nangunhe Nature Reserve in the prefecture of Lincang, SW Yunnan (Geissmann *et al.*, 2006).

Traditionally, the range of *Nomascus gabriellae* encompasses northeastern Cambodia south of Ratanakari Province, and southern Vietnam south of Bach Ma. The range is here augmented to include animals that, at least phenotypically (i.e., colouration), are *N. gabriellae*, extending as far north as Savannakhet in southern Laos and Thua Thien Hue Province (and possibly Quang Tri Province) in central Vietnam (Geissmann *et al.*, 2000). Conversely, the range of *N. siki* here is taken to extend only as far south as Savannakhet in southern Laos and Quang Binh Province (and possibly Quang Tri Province) in central Vietnam (Geissmann *et al.*, 2000).

Nomascus leucogenys was formerly present in southernmost Yunnan Province, China (Ma and Wang 1988). In the 1980s, a very small population still occurred in Xishuangbanna Prefecture in southernmost Yunnan, China, just across the border from Vietnam (Hu *et al.*, 1989, 1990), but the species may no longer survive there (Bleisch, pers. comm.). In Vietnam it has been extirpated from several areas where it was previously recorded, and is now known only from a few localities in the northwest and north-central parts of this country (Geissmann *et al.*, 2000; Nguyen Manh Ha *et al.*, 2005).

The range of *N. nasutus* formerly extended over most of northeastern Vietnam east of the Red River. Gibbons of some undetermined species formerly lived in adjacent areas of southeastern China (Guangdong and Guangxi Provinces), but are thought to have almost completely disappeared from there during the 1950s (Chan *et al.*, 2005; Geissmann *et al.*, 2000). Today, the species is found in a small area of northeastern Vietnam and southeastern China northeast of the Red River, where it is restricted to the Phong Nam-Ngoc Khe mountains, Trung Khanh District, northern Cao Bang Province, and adjacent forest in Jingxi County, Guangxi (Bleisch, pers.

comm.; Geissmann *et al.*, 2002, 2003). It is possibly still extant in neighbouring Hoa Binh Province, Vietnam, as well, and there are unconfirmed reports from Kim Hy forest in Bac Kan Province (which has since been proposed as a nature reserve).

Nomascus hainanus is confined to the Bawangling Nature Reserve on the western side of the island of Hainan, China (Chan *et al.*, 2005). Before the 1960s, the Hainan crested gibbon was widely distributed across the island, with an estimated population of over two thousand individuals (Liu *et al.*, 1984).

Population

Table 2 summarizes the available population estimates for each species by country. Estimates older than 20 years were ignored. Global population estimates are currently available for only 6 (or 37.5%) of the 16 recognized gibbon species, meaning that for the remaining 10 (or 62.5%) they are not. For seven of the latter species the size of at least one subpopulation has been estimated, but for the remaining three no population estimates are available at all. Similarly, population size estimates are available for only 20 (or 53%) of 38 national populations, whereas the size of 18 of these populations (47%) remains unknown (Table 2).

Major threats

An assessment of 2003 (Geissmann, 2003) identified the following top four threats to gibbon survival: (1) Habitat loss and fragmentation; (2) Habitat degradation; (3) Hunting (for food, traditional “medicine,” and sport); (4) Illegal trade (in pets and traditional “medicine”).

As a result of the Red List assessment of 2006, the major threats for each gibbon population were assessed separately (Table 3). The conclusions, however, remain largely the same, although the order of the threats may vary among populations.

Conservation measures

All gibbons are listed under CITES Appendix I (CITES, 2007), precluding all international commercial trade in the species. Gibbon species are protected in most countries where they are found by national laws (e.g. China, India, Indonesia, Thailand, Vietnam).

All species have important populations in protected areas. Some, like *H. hainanus* in China or *H. lar* in Thailand, are entirely or almost entirely confined to protected areas; whereas large populations of species such as *H. klossii* or *H. moloch* occur outside of protected areas, while the only forest supporting *N. nasutus* is still not officially protected. Only one protected area exists in the range of *H. klossii* (Siberut National Park), and the second largest population of *H. moloch* (i.e. in the Dieng Mountains, central Java) is not in a protected area. In

the interest of preserving these species over the long term, additional areas will require some level of increased protection.

Table 2. Population estimates for each gibbon species, by country. – *Geschätzte Bestandesgrößen aller Gibbonarten für jedes Land im jeweiligen Verbreitungsgebiet.*

Species	Country	Population estimate ⁽¹⁾	References
<i>Hoolock hoolock</i>	Bangladesh	200-280	Islam <i>et al.</i> , 2006; Molur <i>et al.</i> , 2005
	China (SE Tibet) ⁽²⁾	NA	
	India	2,400	Das <i>et al.</i> , 2006 ⁽³⁾ ; Molur <i>et al.</i> , 2005
<i>Hoolock leuconedys</i>	China	50-300	Lan, 1994; Tian <i>et al.</i> , 1996; Zhang, 1998; Zhang <i>et al.</i> , 2002
	India	170	Das <i>et al.</i> , 2006
	Myanmar	10,000–50,000	Brockelman, pers. comm.
<i>Hylobates agilis</i>	Indonesia	NRA	
	Thailand	a few thousand	Brockelman, pers. comm.
<i>Hylobates albibarbis</i>	Indonesia (Kalimantan)	NRA	
<i>Hylobates klossii</i>	Indonesia	20,000–25,000	Whittaker, 2005b, 2006
<i>Hylobates lar</i>	China	10?	Geissmann <i>et al.</i> , 2006; Guo and Wang, 1995; Lan and Wang, 2000
	Indonesia	NRA	
	Laos	NA	
	Malaysia	NRA	
	Myanmar	NA	
	Thailand	15,000–20,000	Brockelman, pers. comm.
<i>Hylobates moloch</i>	Indonesia	4,000–4,500	Nijman, 2004
<i>Hylobates muelleri</i>	Brunei, Indonesia, Malaysia	250,000–375,000	Meijaard and Nijman, unpublished data
<i>Hylobates pileatus</i>	Cambodia	>35,000	Traeholt <i>et al.</i> , 2005
	Laos	NA	
	Thailand	12,000	Brockelman, pers. comm.
<i>Nomascus concolor</i>	Global	1,300–2,000	Brockelman, pers. comm.
	China	1,000–1,300	Jiang <i>et al.</i> , 2006
	Laos	NA	
	Vietnam	<100	Geissmann <i>et al.</i> , 2000
<i>Nomascus gabriellae</i>	Cambodia	20,000	Traeholt <i>et al.</i> , 2005
	Laos	NA	
	Vietnam	NA	
<i>Nomascus hainanus</i>	China	18	Zhou Jiang, pers. comm.
<i>Nomascus leucogenys</i>	China	0?	Bleisch, pers. comm.
	Laos	NA	
	Vietnam	NA	
<i>Nomascus nasutus</i>	China	10	Tan Weifu, pers. comm.
	Vietnam	<40	Geissmann <i>et al.</i> , 2002b, 2003; La Quang Trung and Trinh Dinh Hoang, 2004; Vu Ngoc Thanh <i>et al.</i> , 2005
<i>Nomascus siki</i>	Laos	NA	
	Vietnam	NA	
<i>Symphalangus syndactylus</i>	Indonesia	NRA	
	Malaysia	NRA	
	Thailand	NRA	

⁽¹⁾ NA: no population estimate available, NRA: no recent population estimate available; estimates older than 20 years were ignored.

⁽²⁾ The species identity of this taxon is not established

⁽³⁾ A population of about 170 gibbons was recently allocated to *H. leuconedys* (Das *et al.*, 2006) and is here subtracted from the population estimate for *H. hoolock* in NE India (Molur *et al.*, 2005).

Table 3. Major threats to gibbon populations. – Hauptbedrohungen für den Fortbestand der Gibbonpopulationen.

Species	Major Threats	References
<i>Hoolock hoolock</i>	Habitat loss and fragmentation, hunting (food, traditional “medicine”). <i>China (Tibet)</i> : Hunting (food) (not established). <i>India</i> : Habitat loss (jhum cultivation, harvesting of bamboo for paper mills, oil mining and exploration, and coal mining). <i>Myanmar</i> : Habitat loss (shifting cultivation, logging) and hunting	Bleisch, Brockelman, and Htun, pers. comm.; Choudhury, 1991, 2001; Das, pers. comm.; Gupta, 2005; Islam and Feeroz, 1992; Molur <i>et al.</i> , 2005
<i>Hoolock leuconedys</i>	Habitat loss, hunting (food, traditional “medicine”)	Brockelman and Htun, pers. comm.
<i>Hylobates agilis</i>	Habitat loss (coffee plantations, rubber plantations and other crops) and hunting for the habitat and pet trade	Brockelman, pers. comm.; Nijman, 2005; O'Brien <i>et al.</i> , 2004
<i>Hylobates albibarbis</i>	Habitat loss (fires, illegal logging), pet trade	Nijman, pers. comm.
<i>Hylobates klossii</i>	Habitat loss (oil palm plantations, forest clearing), habitat degradation (logging, product extraction by local people), commercial hunting, illegal trade (pets)	Whittaker, 2005b, 2006
<i>Hylobates lar</i>	Hunting (food), illegal trade (pets), habitat loss (construction of roads through protected areas, shifting agriculture, commercial of palm oil plantations). <i>Northern Sumatra</i> : Ladia Galaskar (a network to link the west and east coasts of Aceh Province) means that much of the remaining forest is at risk	Brockelman, pers. comm.
<i>Hylobates moloch</i>	Habitat loss and habitat degradation (both of which have slowed down), illegal trade (unquantified)	Nijman, 2005
<i>Hylobates muelleri</i>	Habitat loss, illegal trade (pets), and [<i>interior Borneo</i> :] hunting (food)	Meijaard <i>et al.</i> , 2005; Nijman, 2005
<i>Hylobates pileatus</i>	Habitat loss, hunting (food), illegal trade (pets). <i>Thailand</i> : most of the remaining habitat is now in protected areas, but hunting continues within these areas. <i>Cambodia</i> : main threat is habitat loss (logging, agriculture, hydro-electric development, and human settlement)	Duckworth <i>et al.</i> , 1999; Traeholt <i>et al.</i> , 2005
<i>Nomascus concolor</i>	Habitat loss and fragmentation, hunting	Geissmann <i>et al.</i> , 2000; Jiang <i>et al.</i> , 2006; Johnson <i>et al.</i> , 2005; Le Trong Dat <i>et al.</i> , 2000, 2001; Ngo Van Tri and Long, 2000; Tallents <i>et al.</i> , 2000a, b, 2001a, b
<i>Nomascus gabriellae</i>	Vietnam: illegal trade (pets). <i>Laos</i> : hunting (food)	Duckworth <i>et al.</i> , 1999; Geissmann <i>et al.</i> , 2000
<i>Nomascus hainanus</i>	Hunting, habitat degradation (suboptimal habitat quality), small population size (inbreeding effects, poor mate-choice, and risks from human or natural disaster)	Chan <i>et al.</i> , 2005; Geissmann, 2005, pers. comm.
<i>Nomascus leucogenys</i>	Habitat loss and fragmentation (agricultural encroachment into mountainous areas, fuel-wood and timber extraction, especially in China and Vietnam), hunting (food, traditional “medicine”, cultural value)	Duckworth <i>et al.</i> , 1999; Geissmann <i>et al.</i> , 2000
<i>Nomascus nasutus</i>	Habitat loss (charcoal-making, cultivation, livestock grazing, firewood collection), habitat degradation, hunting, small population size (inbreeding effects, poor mate-choice, and risks from human or natural disaster)	Bleisch and Geissmann, pers. comm.; Geissmann <i>et al.</i> , 2002b, 2003; La Quang Trung and Trinh Dinh Hoang, 2004
<i>Nomascus siki</i>	Habitat fragmentation (logging, agricultural encroachment, and [<i>Vietnam</i>] high human population density), hunting (“medicine”, food), illegal trade (pets)	Duckworth <i>et al.</i> , 1999; Geissmann <i>et al.</i> , 2000; Nguyen Manh Ha <i>et al.</i> , 2005
<i>Symphalangus syndactylus</i>	Habitat loss (logging, road development, conversion to agriculture or plantations), illegal trade (pets)	Nijman and O'Brien, pers. comm.; O'Brien <i>et al.</i> , 2003, 2004

Unfortunately, in most protected areas laws against forest encroachment and poaching are not adequately enforced, and there is an urgent need for improved management, protection and patrolling, ideally involving community development aspects.

Several species are in need of taxonomic studies. In particular, *H. agilis* subspecies, *H. lar* subspecies (specifically *yunnanensis*), *N. gabriellae*, and *N. siki* require further investigation.

Surveys are recommended in several areas. For instance, in Myanmar there is a need to survey the *H. hoolock* areas west of Chindwin/Irrawady (now Ayerawady) River. Further survey work is needed to

determine current population numbers of *H. lar* within protected areas across its range, and a priority area is southwest Yunnan, because it is unclear whether the species still survives in China. Field surveys throughout the range of *N. gabriellae*, *N. siki* and *N. leucogenys*, ideally including the collection of sound recordings, genetic data and photographic recordings, would help to determine the number of taxa involved and better define their distributional areas. Survey work outside the only known locality of *N. hainanus* (Bawangling Nature Reserve) may help to find surviving individuals or groups not yet accounted for, especially in Diaoluoshan Nature

Reserve, Yinggelin Nature Reserve, and Jianfenglin Nature Reserve.

Red List Assessment

The IUCN Red List Categories and Criteria are intended to be an easily and widely understood system for classifying species at high risk of global extinction. The general aim of the system is to provide an explicit, objective framework for the classification of the broadest range of species according to their extinction risk. A representation of the relationships between the categories is shown in Fig. 1. In order to qualify for listing at a particular level of threat, a taxon needs to meet particular criteria and subcriteria. Summarizing them would go beyond the scope of this paper, but the current version of the Categories and Criteria (version 3.1) and guidelines for using them are described elsewhere (IUCN, 2001; Standards and Petitions Working Group, 2006).

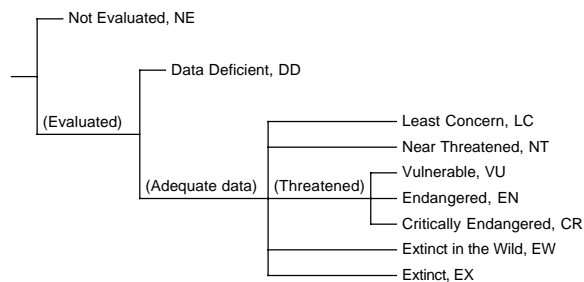


Fig. 1. Structure of the IUCN Red List categories (after IUCN, 2001). – *Beziehung zwischen den Kriterien zur Beurteilung des Bedrohungsgrades von Tieren der Roten Liste (nach IUCN, 2001).*

A total of 28 gibbon taxa were evaluated (16 species, 12 subspecies). Four of these (*Hoolock leuconedys*, *Hylobates albibarbis*, *Nomascus siki*, and *N. hainanus*) had not been recognized as distinct species in earlier Red List assessments, but rather, as subspecies of *Hoolock hoolock*, *Hylobates agilis*, *Nomascus leucogenys*, and *N. nasutus*, respectively. Because two species (*H. agilis* and *H. moloch*) were recognized as monotypic in the new assessment, four subspecific taxa no longer required separate assessments.

Table 4 lists both the last Red List assessments for all gibbon taxa (carried out in 2001 or 2003, depending on species) (IUCN, 2006), and the new

Red List assessments of September 2006. The last column in Table 4 identifies the changes that occurred between the latest and previous assessments.

The following species should be carefully monitored in the future:

(1) *Hylobates albibarbis* is hunted and collected for the wildlife trade and for human consumption where it occurs. A large part of its range is in peat swamp – an extremely threatened ecosystem. This species may qualify for CR in the future if rates of habitat change increase.

(2) *Nomascus gabriellae* is in need of close monitoring since, given predicted likely rates of both habitat loss and hunting in the future, it could well warrant listing in a higher category of threat.

(3) *Symphalangus syndactylus* has likely suffered 70-80% habitat loss of primary habitat within the last three generations (ca. 50 years) within its range, but fortunately is one of the most adaptable gibbon species to habitat change. Loss of habitat continues, however, and is compounded by impacts of road building and collection for the pet trade. Thus, this species could be considered CR due to historic habitat loss with more detailed information.

(4) The status of *Hylobates moloch* was considered EN in the previous assessment of 2000 (IUCN, 2006). The change in status from CR to EN reflects the availability of better information and does not suggest that the threats have decreased. There is concern about the legal status of the largest populations; therefore, the current status and persistent threats should be carefully monitored.

Table 5 summarizes a comparison between the most recent and previous Red List assessments. In the latest assessment, two of the 28 assessed gibbon taxa were placed into a lower threat category (the difference being one level in both cases), five taxa remained in the same threat category, 13 taxa were elevated in their threat category by one level, 11 taxa were elevated in their threat category by two levels, and for the remaining two taxa the assessments were not comparable because at least one of the latter was Data Deficient (DD). The most significant information revealed by this comparison is that 86% of all gibbon taxa have become more endangered within the last three to six years by at least one category, and 39% by two categories.

Table 4. Red List assessments for all gibbon taxa. – *Einschätzung des Bedrohungsgrades aller Gibbonarten und –unterarten für die Rote Liste.*

Last Red List assessment of 2000 and 2003 (IUCN, 2006)				New Red List assessment of September 2006			Difference between assessments ⁽²⁾
Species / Subspecies	Assessment ⁽¹⁾		Year assessed	Species / Subspecies	Assessment ⁽¹⁾		
	Category	Criteria			Category	Criteria	
<i>Bunopithecus hoolock hoolock</i>	EN	A1cd	2000	<i>Hoolock hoolock</i>	EN	A2abcd+3bcd +4abcd	0
<i>B. h. leuconedys</i>	EN	A1cd	2000	<i>Hoolock leuconedys</i>	VU	A4cd	–
<i>Hylobates agilis</i>	LR/nt		2000	<i>Hylobates agilis</i>	EN	A2cd	++
<i>H. a. albibarbis</i>	LR/nt		2000	<i>Hylobates albibarbis</i>	EN	A4cd	++
<i>Hylobates klossii</i>	VU	A1c+2c, B1+2ac	2000	<i>Hylobates klossii</i>	EN	A2cd	+
<i>Hylobates lar</i>	LR/nt		2000	<i>Hylobates lar</i>	EN	A2cd	++
<i>H. l. yunnanensis</i>	CR	C2a, D	2000	<i>H. l. yunnanensis</i>	DD		NA
<i>H. l. vestitus</i>	LR/nt		2000	<i>H. l. vestitus</i>	EN		++
<i>H. l. lar</i>	LR/nt		2000	<i>H. l. lar</i>	EN		++
<i>H. l. entelloides</i>	LR/nt		2000	<i>H. l. entelloides</i>	VU	A2cd	+
<i>H. l. carpenteri</i>	LR/nt		2000	<i>H. l. carpenteri</i>	EN	A2cd	++
<i>Hylobates moloch</i>	CR	A1cd, C2a	2000	<i>Hylobates moloch</i>	EN	A2c	–
<i>Hylobates muelleri</i>	LR/nt		2000	<i>Hylobates muelleri</i>	EN	A2cd	++
<i>H. m. muelleri</i>	LR/nt		2000	<i>H. m. muelleri</i>	EN	A2cd	++
<i>H. m. funereus</i>	LR/nt		2000	<i>H. m. funereus</i>	EN	A4cd	++
<i>H. m. abbotti</i>	LR/nt		2000	<i>H. m. abbotti</i>	EN	A2cd	++
<i>Hylobates pileatus</i>	VU	A1cd+2cd	2000	<i>Hylobates pileatus</i>	EN	A4cd	+
<i>Nomascus concolor</i>	EN	A1cd, C2a	2000	<i>Nomascus concolor</i>	CR	A2cd	+
<i>N. c. concolor</i>	EN	A1cd, C2a	2000	<i>N. c. concolor</i>	CR	A2cd, C2a(i)	+
<i>N. c. furvogaster</i>	CR	A2cd, B2a	2000	<i>N. c. furvogaster</i>	CR	A2cd; C2a(i)	0
<i>N. c. jingdongensis</i>	CR	C2b	2000	<i>N. c. jingdongensis</i>	CR	A2cd; C2a(i)	0
<i>N. c. lu</i>	EN	A1c	2000	<i>N. c. lu</i>	CR	A2cd; C2a(i)	+
<i>Nomascus gabriellae</i>	VU	A1cd+2cd	2000	<i>Nomascus gabriellae</i>	EN	A4cd	+
<i>Nomascus leucogenys leucogenys</i>	EN	A1cd+2cd	2000	<i>Nomascus leucogenys</i>	CR	A2cd, A3cd	+
<i>N. l. siki</i>	DD		2000	<i>Nomascus siki</i>	EN	A2cd	NA
<i>Nomascus nasutus nasutus</i>	CR	C2a(i)b; D	2003	<i>Nomascus nasutus</i>	CR	A2acd; B1ab(iii,v); C2a(i,ii); D1	0
<i>N. n. hainanus</i>	CR	B1ab(iii,v); C2a(ii)b; D	2003	<i>Nomascus hainanus</i>	CR	A2acd; B1ab(iii,v); B2ab(iii,v); C2a(i,ii); D1	0
<i>Symphalangus syndactylus</i>	LR/nt		2000	<i>Symphalangus syndactylus</i>	EN	A2cb	++

⁽¹⁾ Abbreviations: CR Critically Endangered, DD Data Deficient, EN Endangered, LR/nt Low Risk/Near Threatened, VU Vulnerable. The category “Low Risk” was abandoned in 2003. For criteria and subcriteria on which the category assessment is based, see IUCN (2001) and Standards and Petitions Working Group (2006).

⁽²⁾ Abbreviations: NA not applicable because at least one of the compared entries is data deficient (DD), 0 no change, + new assessment with higher threat category (difference 1 level), ++ new assessment with higher threat category (difference 2 levels), – new assessment with lower threat category (1 level)

Table 5. Summary comparison between the last Red List assessments for all gibbon taxa (carried out in 2001 or 2003, depending on species; IUCN, 2006) and the latest Red List assessments of September 2006. – *Aufsummierte Änderung des Bedrohungsgrades von Gibbonarten und –unterarten aufgrund der Einschätzungen für die Rote Liste aus den Jahren 2001 und 2003 (IUCN 2006) und der neuen Einschätzungen für die Rote Liste vom September 2006.*

Taxa	Change in threat category ⁽¹⁾					Total
	–	0	+	++	NA	
Species	2	3	5	5	1	16
Subspecies	0	2	3	6	1	12
Total	2	5	13	11	2	28

⁽¹⁾ Abbreviations: NA = not applicable because at least one of the compared entries is data deficient (DD), 0 = no change, + = new assessment with higher threat category (difference 1 level), ++ = new assessment with higher threat category (difference 2 levels), – = new assessment with lower threat category (1 level).

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Zusammenfassung

Neubeurteilung des Bedrohungsstatus der Gibbons: Resultate des Workshops 2006 zur Roten Liste der asiatischen Primaten

Der Bedrohungsstatus asiatischer Primatenarten und -unterarten wurde für die Rote Liste bedrohter Tiere (IUCN) im Rahmen eines Workshops vom 8.–12. September 2006 in Phnom Penh, Kambodscha, neu beurteilt. Die vorliegende Veröffentlichung widmet sich speziell denjenigen Resultaten des

Workshops, welche die Gibbons oder Kleinen Menschenaffen betreffen. In der hier verwendeten Systematik werden 16 Gibbonarten anerkannt, von denen drei in insgesamt 12 Unterarten aufgeteilt werden. Die vorgestellten Resultate umfassen die Themen Taxonomie der Gibbons, geographische Verbreitung, Populationsgrösse, Hauptbedrohungen, Schutzmassnahmen und Beurteilung des Bedrohungsstatus mittels der IUCN-Kategorien und -Kriterien für die Rote Liste. Für die Populationsgrössen (Tabelle 2) werden nur Schätzwerte verwendet, die jünger sind als 20 Jahre. Nur für 6 (37.5%) der 16 Gibbonarten ist ein Schätzwert für die Gesamtpopulation vorhanden. Von sieben der restlichen 10 Arten wurde zumindest die Bestandesgrösse einer Teilpopulation geschätzt, aber für drei Gibbonarten sind überhaupt keine Informationen zur Populationsgrösse vorhanden. Ähnlich verhält sich die Situation, wenn man die Gibbonpopulationen der einzelnen Arten für jedes Land separat betrachtet: Nur für 20 (53%) von 38 nationalen Gibbonpopulationen liegen Schätzwerte für die Bestandesgrösse vor, während die Grösse von 18 dieser Populationen (47%) unbekannt bleibt. Zu den vier Hauptbedrohungen für das Überleben der Gibbons gehören Lebensraumverlust und -fragmentation, Lebensraumverschlechterung, Jagd (Ernährung, "Medizin", Sport), und illegaler Handel (Haustiere, "Medizin"). Dabei kann die Rangordnung der einzelnen Bedrohungen von Gebiet zu Gebiet verschieden sein. Ein Vergleich des neu beurteilten Bedrohungsstatus der einzelnen Gibbonarten mit der letzten Beurteilung aus dem Jahr 2000 oder 2003 (je nach Gibbonart) zeigt, dass innerhalb der letzten drei bis sechs Jahre die Bedrohung bei 10 von 16 Arten und 9 von 12 Unterarten – also 86% aller Gibbonformen – um mindestens eine Kategorie zugenommen hat, bei 39% sogar um zwei Kategorien.