

Quick guide

Gibbons

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What is a gibbon? Gibbons (Hylobatidae) are small arboreal apes that are predominantly found in tropical and sub-tropical forests of South East Asia, South China, Bangladesh and North-East India. True brachiators — animals that swing from tree to tree — these apes are often described as ‘acrobats of the forest’, leaping up to 8 metres between branches and reaching speeds of approximately 56 kilometres per hour. When not brachiating, gibbon locomotion is bipedal with their long arms held aloft. Gibbons live in nuclear family units, occupying a territory of between 20 to 100 hectares that they defend with vigorous visual and vocal displays. The vocalisations consist of elaborate songs mostly performed as a coordinated duet between the mated pair. These songs are audible for long distances and are the primary method used by researchers — and poachers — to locate wild populations. Their haunting melody has become part of folklore for indigenous people of Asia.

How many species of gibbons are there? Gibbon taxonomy is a complex and dynamic field with species identification being based on a number of variables, including geographical distribution, vocalisation, genetics, morphology, colouration and behavior. Currently, 15 species of gibbon are recognised — and there is recent evidence for a 16th — making them the most diverse of extant apes. Species are grouped into four genera separated largely by differences in karyotype; each genus is said to be as different from one another as *Pan* and *Homo*. The siamang (*Symphalangus*: chromosomes $2n = 50$) has one species and two subspecies. These are the most sexually dimorphic, largest and loudest of the Hylobatidae. Siamangs are characterised by syndactylus on the feet and large throat sacs that

inflate to amplify calls. The crested gibbons (*Nomascus*: chromosomes $2n = 52$) are currently recognised as having five species and two subspecies. This sexually dichromatic genus has shorter, more dense hair than other gibbon groups. Two species of hoolock gibbons (*Hoolock*: chromosomes $2n = 38$) are described that exhibit sex-specific colouration. This genus is known for having distinct white brows and goatee. The *Hylobates* group (chromosomes $2n = 44$) comprises seven species

and 10 subspecies. The pileated gibbon (*H. pileatus*) is the most sexually dichromatic (Figure 1), whereas in lar (*H. lar*) and Kloss gibbons (*H. klossii*), males and females are similar in color. The remaining species exhibit only slight colour variation between sexes.

What are the key features of gibbon social organisation? In general, social behaviour is consistent across gibbon species. They are ‘socially monogamous’,

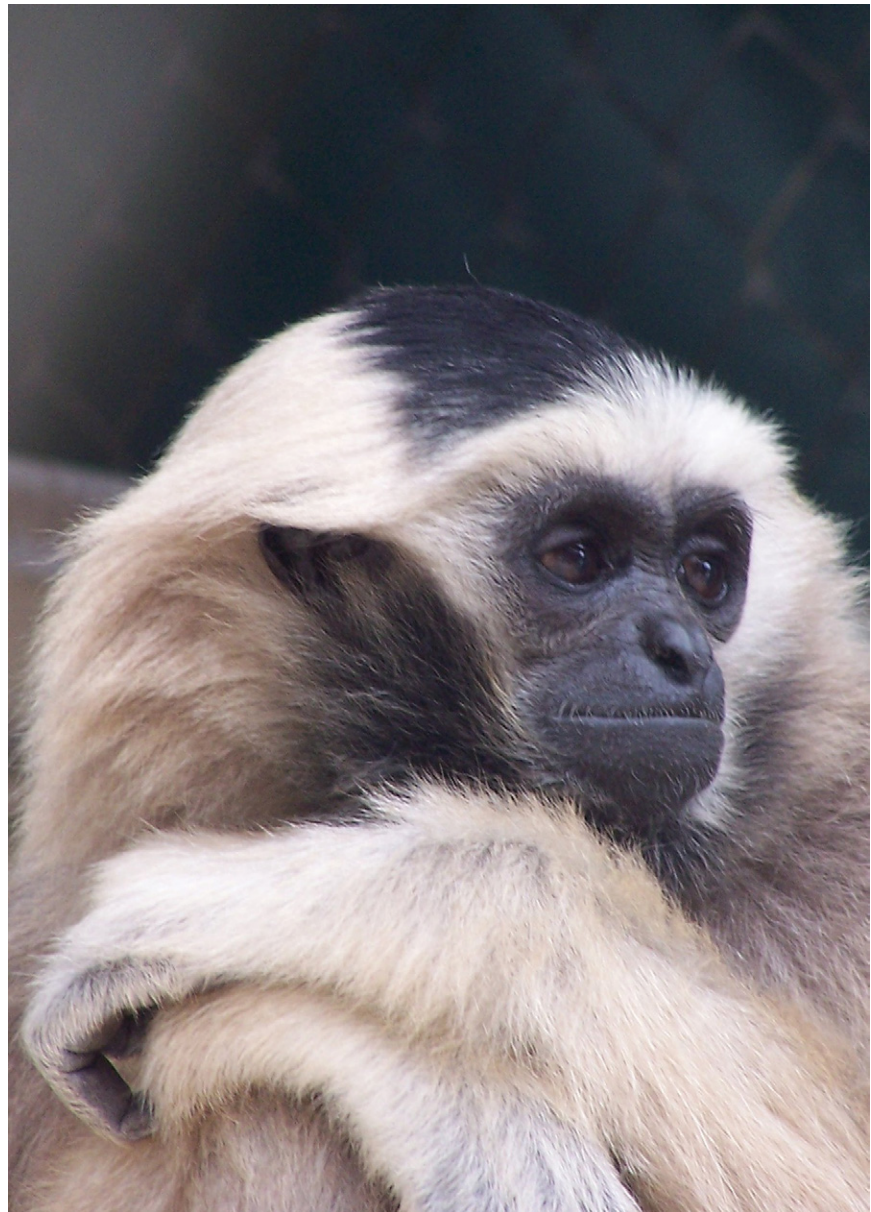


Figure 1. Female, juvenile pileated gibbon (*H. pileatus*).

This species exhibits developmental colour changes. Infants are born buff and then progress through the colour phase depicted, before developing their gender-specific pelage (males will become black-brown and females retain the colouration shown).

maintaining stable pair bonds that persist for many years but do not preclude extra-pair copulations and partner changes. The basic social unit is the monogamous family with one breeding pair and their immature offspring (mean group size $N = 4$). However, recent observations have reported polygamous groupings in some species. Females give birth to a single infant at approximately 2.5–3 year intervals. Young remain in their natal group for 7–10 years, being evicted through directed aggression from the same-sex parent at sexual maturity.

Reports of intra-group and inter-group social interactions provide divergent accounts of sociality in these apes. In contrast to many other primates, gibbons have been reported to spend as little as 1% of their day engaged in affiliative social activities. Higher estimates for *H. hoolock* of around 6% have been recorded and for *H. lar*, 11.3% of the activity budget can be devoted to affiliative intra-group interactions; these figures are still below the average observed for many other primates. Gibbons retire to sleeping trees several hours before nightfall, often remaining awake for long periods before sleep; this time would seem free for socialising, but lack of conspicuous vocal and social interactions between individuals at sleeping places likely reflects a predator avoidance adaptation.

Lack of social behaviour is often considered a consequence of limited partner availability resulting from social monogamy, inter-birth intervals of more than 2.5 years and territoriality that excludes socialising with non-related individuals. This latter point may, however, be inaccurate. Recent studies suggest that affiliative interactions between contiguous groups of *H. lar* may be relatively common, with juveniles from neighbouring groups playing together and adult males tolerating immatures. This brings into question the idea that gibbon family groups are closed social units, introducing the possibility that inter-group relationships may be maintained.

Grooming and play are the most common social activities. Levels of allogrooming are reported to vary with season, potentially as a function of increased photoperiod or decreased foraging pressure. Social

play is mainly an activity of immature gibbons. Sub-adults are the usual play partners for juveniles, although adult males play with offspring particularly in the absence of sub-adult playmates. Active paternal care outside of play is lacking in most gibbon species; *S. symphalangus* is the exception, with infants being carried and cared for almost exclusively by fathers from weaning to complete independence.

Are gibbons as intelligent as other apes? Overall, gibbons are highly encephalised, with a larger brain than would be predicted by body size. The neocortex — the area of the brain involved in higher cognitive functions — is well developed, although the frontal lobe anatomy appears to divide the great apes and gibbons. Given the level of cortical development, it is surprising that gibbon cognitive abilities are generally interpreted as poor. Although there is a paucity of data in this field, taking a view across studies suggests there are occasions when these apes do appear capable of performance comparable to great apes. Tool-use is often considered indicative of intelligence and although there are no systematic reports of true tool-use in gibbons, they are capable of object-directed problem-solving and understand some causal relationships inherent in tool-use problems.

The data are particularly scant regarding social cognition; however, it appears that gibbons, like many other primates, are able to detect direction of another's gaze and follow gaze cues of both human and conspecific demonstrators. They recognise inconsistencies between line of sight and object location, suggestive of a deeper understanding of attention. There is also an indication that gibbons comprehend the intention of a cue-giver and understand another individual 'sees' something when their eye direction is focused on an object or event. Although these capacities are thought to underpin the development of theory of mind (understanding the psychological states of others), an ability that may be shared by humans and great apes, there is little compelling evidence of self-awareness or awareness of others' knowledge states in the Hylobatidae. That gibbons have

some social skills is inherent in that they live with others. Whether higher level cognitive skills are necessary to live peaceably with other individuals in small family units has yet to be determined.

What does the future hold for gibbons? Many of the Hylobatidae are on the brink of extinction with the Hainan gibbon (*N. hainanus*) being the rarest primate in the world with approximately 20 individuals left in the wild. There are various reasons for declining numbers: agriculture, commercial forestry and hunting for medicinal or pet trade pose significant threats to gibbon populations across their range. However, it is the alarming rate of habitat loss that causes the greatest concern; South-East Asia has the highest rate of deforestation of any tropical region and in China, 99% of available gibbon habitat has been lost. For these apes, this has devastating effects as they live in small family groups that defend large territories. Reduction in available forest substantially limits numbers, and as gibbons are important seed dispersers, their demise puts remaining forests in further jeopardy. Asian governments need to take more action to protect habitats and to educate local populations about the potential value of forests and animals that live within them. Rehabilitation centers are housing gibbons with the ultimate goal of releasing physically and mentally healthy gibbons; this will be a futile endeavour if there are no habitats left.

Where can I find out more?

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