

TAXONOMY AND DESCRIPTION

Lorises are primates of the suborder *Prosimii* and belong to the family *Lorisidae*. *Lorisidae* are divided into two subfamilies: *Galaginae* and *Lorisinae*. Lorises are in the latter subfamily. Three loris species occur in Asia: slow loris (*Nycticebus coucang*), pygmy loris (*Nycticebus pygmaeus*) and slender loris (*Loris tardigradus*).

The pygmy loris is also referred to as the “pygmy slow loris” or the “lesser slow loris”. The lorises’ name comes from the Dutch word “loerus” which translates as “clown” (Lydekker, 1901). The word *Nycticebus* means “night ape” (Pournelle, 1955).

Table 1: Taxonomy of Asian lorises (some synonyms and proposed new names are included in parentheses; for possible taxonomic changes in the future, see for instance Groves 1998).

	Slow Loris	Pygmy Loris	Slender Loris
Order	Primate	Primate	Primate
Suborder	Prosimii	Prosimii	Prosimii
Family	Lorisidae	Lorisidae	Lorisidae
Subfamily	Lorisinae (Loridae)	Lorisinae (Loridae)	Lorisinae (Loridae)
Genus	<i>Nycticebus</i>	<i>Nycticebus</i>	<i>Loris</i>
Species	<i>N. coucang</i> (some populations may turn out to be distinct species; proposed: <i>N. bengalensis</i> , <i>N. javanicus</i>)	<i>N. pygmaeus</i> ; other species (for instance <i>N. intermedius</i> proposed)	<i>Loris tardigradus</i> (possibly including distinct species)

In this manual, we decided to use the old taxonomic names because they are better known.

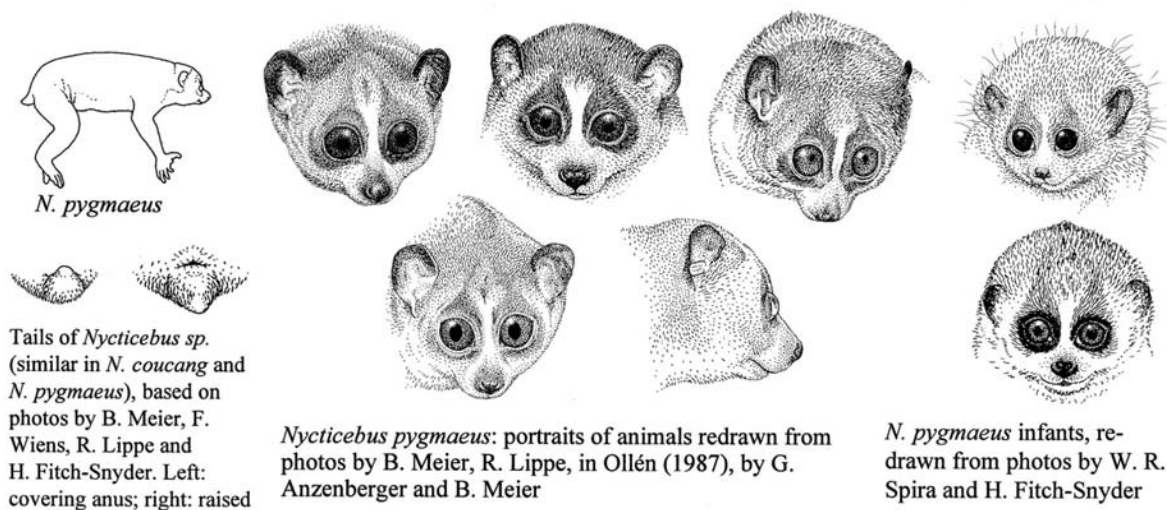


Figure 1: Genus *Nycticebus* (continued on page 2)

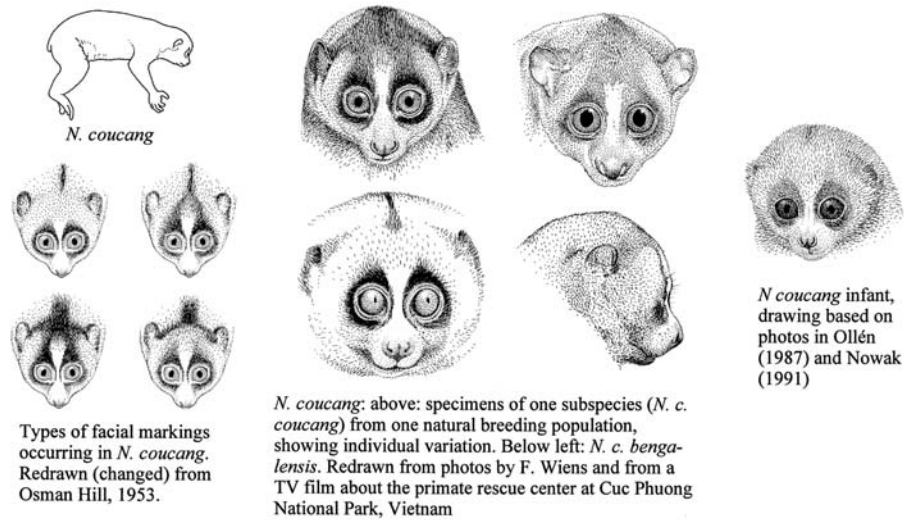


Figure 1: Genus *Nycticebus* (continued)

Mitochondrial DNA polymorphism analyses suggest that the two species of the genus *Nycticebus* commenced divergence 2.7 million years ago (Zhang et al., 1993). A third form has been referred to as *Nycticebus intermedius*. Even though they are morphologically dissimilar, the genetic differences between *Nycticebus pygmaeus* and *N. intermedius* are not sufficient for separate species classification (Zhang et al., 1993).

Lorises have very large eyes, which are directed forward. Their tightly clinging hands and feet have human-like nails. The nail on the second digit of the foot is elongated and rolled up to form a grooming claw. They can maintain a grip while remaining completely immobile for long periods due to a specialized network of blood vessels in the limbs. Like other prosimians, lorises have closely

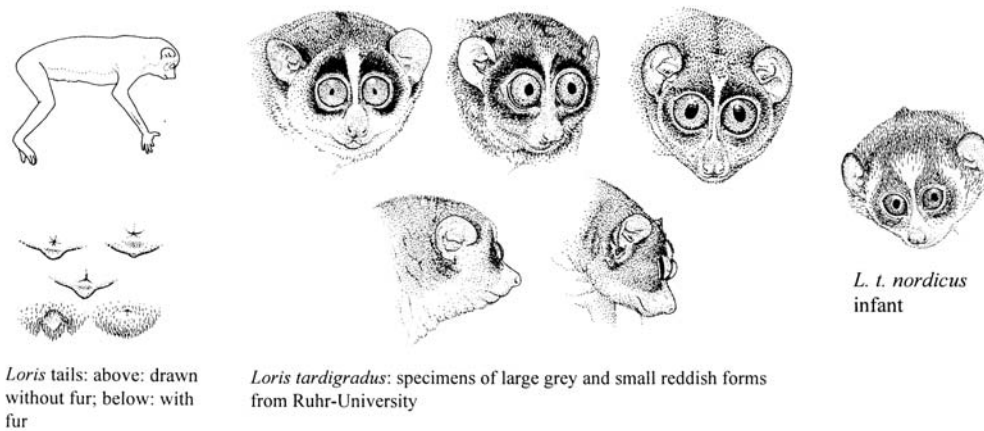


Figure 2: Genus *Loris*

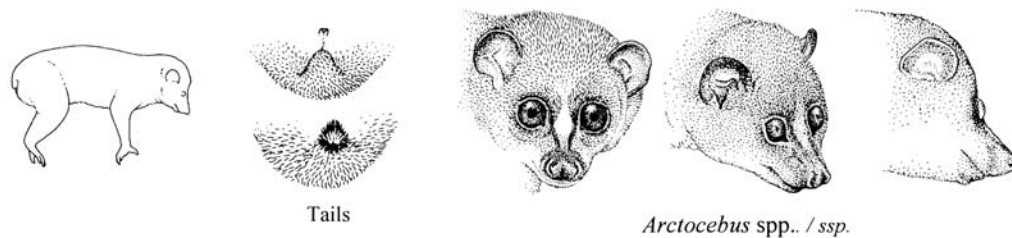


Figure 3: Genus *Arctocebus*

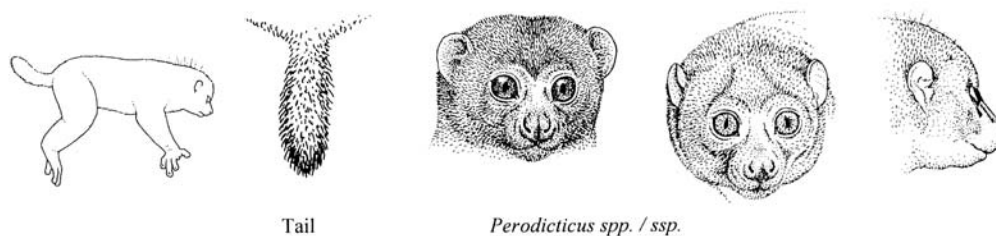
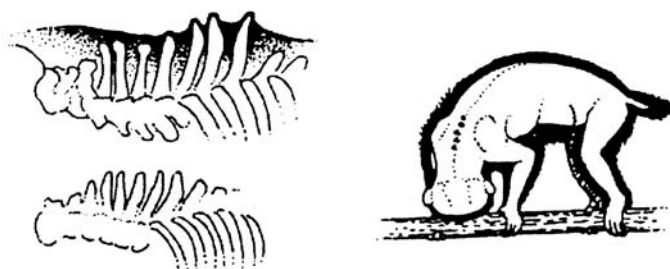


Figure 4: Genus *Perodicticus*

spaced incisors on the lower jaw that form a dental comb (Figure 7), as well as a set of brachial glands that may exude a strong-smelling substance when the animals are under stress. This substance has been found to be toxic when combined with saliva (Alterman, 1995). Loris bites have been known to cause severe illness and even death in humans. In those who develop an allergy, an anaphylactic (allergic) shock within seconds to minutes after a bite is possible; symptoms may be red, itching skin, very low blood pressure, shock, convulsions of muscles (pain), respiratory and heart problems (Wilde, 1972, Pschyrembel, 1995).



In pottos, the vertebral spines in the nuchal region protrude through the skin; they are used for defense (Charles-Dominique, 1977). In *Pseudopotto* (only skeletal material known) the vertebral spines are shorter (Schwartz, 1996).

Figure 5: Length of nuchal spines in *Perodicticus potto* and in the proposed new genus *Pseudopotto*.

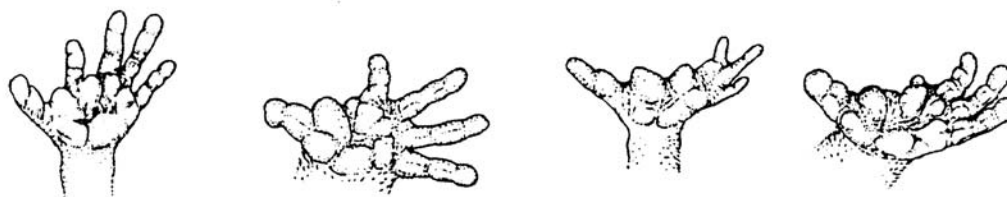


Figure 6: From left to right: hand of *Loris tardigradus*; hand of *Nycticebus coucang*; hand of *Arctocebus calabarensis*; hand of *Perodicticus potto*.

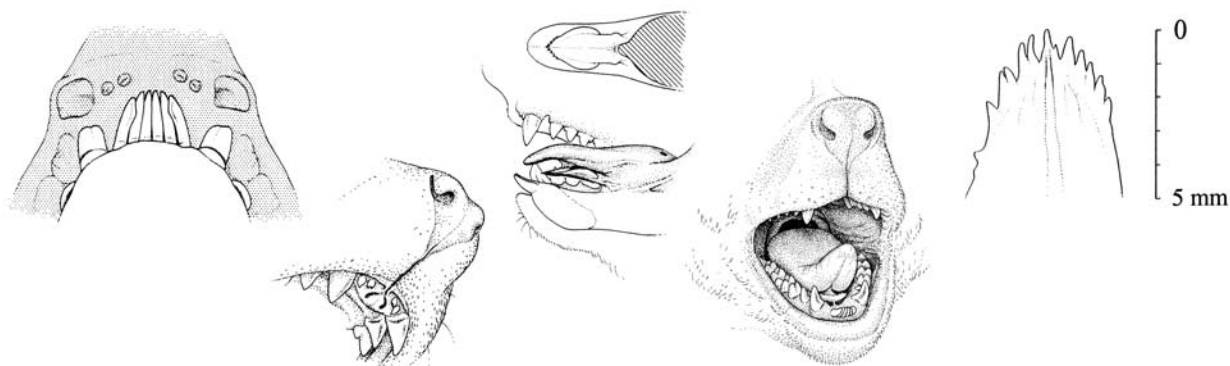


Figure 7: Some structures in the mouth of *Loris tardigradus nordicus*. Tooth comb (ventral side, upper jaw stippled grey), tongue with sublingua (sublingua tips are used for cleaning the tooth comb), and entrance to the vomeronasal organ (supplementary olfactory organ).

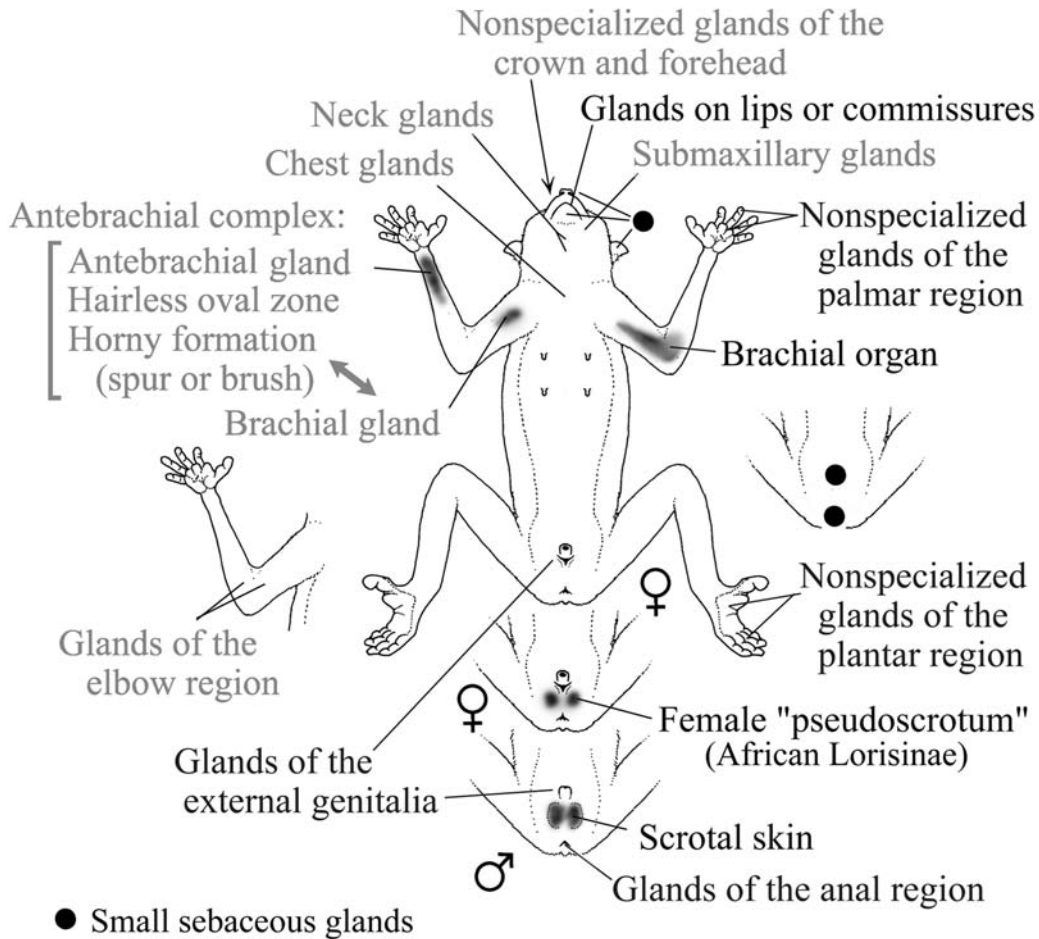


Figure 8: Some skin glands found in prosimian primates. Grey text: Glands of Malagasy lemurs. Black text: Glands found in lorises or pottos. Based on Schilling (1979), Manley (1976), Alterman (1995), Rasmussen and Nekaris (1998), Montagna et al. (1959, 1966), and other sources.

Slow Loris

Slow lorises are robust, compact animals with short and dense woolly fur. They have a very round head and thick muzzle with a rounded snout. Adult slow lorises average about 1,400 grams. Some subspecies can reach up to 2,000 grams, while others weigh less than 900 grams. Coat color ranges from silvery to reddish or dark brown and it may change seasonally. Slow lorises have a dark dorsal stripe that runs from the rump to the top of the head, and their eye rings have a triangular shape. Both slow and pygmy lorises have vestigial tails.

According to Groves (1971), there are four valid subspecies (Table 2). In Groves (1998), two former subspecies (*N. c. bengalensis*, *N. c. javanicus*) are regarded as distinct species. Subspecies identifications are difficult and somewhat unreliable for both the slow and slender lorises. There are overlaps in identifying physical characteristics and problems in identification of geographical origins. As a result of this confusion, there are likely to be hybrids in the captive population. Most slow lorises currently in captivity are classified as either *N. c. bengalensis* (the larger, silver variety), or *N. c. coucang* (the smaller, brown type). Further genetic research is needed to establish a basis for each subspecies and to identify individual captive specimens.

Table 2: Subspecies of the slow loris (Groves, 1971; Fooden, 1991-distribution of *menagensis*)

Subspecies	Distribution	Morphology
<i>N. c. bengalensis</i>	Assam, Myanmar, Thailand, Indo-China	Large, up to 2,000 g. Light-colored, “white frosting” along arms, sides. The forked dorsal stripe uniting eye rings is not well expressed.
<i>N. c. coucang</i>	Malaysia, Sumatra, southern Thailand, Rhio archipelago, northern Natuna Islands	Great deal smaller than <i>bengalensis</i> . Head forks are darker and better developed. Lighter brown. Less frosting along back.
<i>N. c. menagensis</i>	Borneo, Bangka	Smaller than <i>coucang</i> , slightly darker with less well-expressed head forks.
<i>N. c. javanicus</i>	Java	Larger than species from Indonesia, yellowish-gray with strongly contrasting creamy-hued head, neck, and shoulders. Thin, bold, black dorsal stripe. Clear head forks.

Pygmy Loris

Captive pygmy loris adults average 450 grams, although obese specimens can weigh as much as 600 grams. This species is about 1/3 to 1/2 the size of *N. coucang*. They also have larger ears and differences in dentition. The fur is fine and wavy and brownish orange in color, and the markings are similar to the slow loris. Their fur often develops a silvery frost during the winter months. Six pygmy lorises that were weighed at an animal market in Vietnam averaged 353 grams (Tan, 1994).

The distribution and morphological differences between *N. pygmaeus* and *N. intermedius* are not well defined. Alterman and Freed (1997), have found a different form of *Nycticebus* that occurs in Laos, but more data are needed for classification.

Table 3: Forms of the pygmy loris proposed.

Form	Distribution	Morphology
<i>N. pygmaeus</i>	Yunnan Province, China, Vietnam, Laos	Weighs approximately 300-400 g (weight of captive-reared specimens may be untypical). Lacks dorsal stripe. Most body hair is curly (Zhang et al., 1993; Ratajszczak, 1998).
<i>N. intermedius</i>	Yunnan Province, China, Vietnam	Larger, approximately 450-800 g. Dorsal stripe. Not much curly hair (Zhang et al., 1993).
<i>N. sp.</i> (new form proposed, possibly corresponding to <i>N. intermedius</i>)	Bolikhamxay Province, Laos	Differ from others in pelage, body size, and anterior dentition. Do not co-occur with <i>N. pygmaeus</i> , co-occur with <i>N. coucang</i> (Alterman, Freed, 1997).



Slender Loris

Slender lorises are distinguished from the slow lorises by their slender build and thin, elongated limbs. The average weight is approximately 210 grams. The muzzle is more pointed than in the slow and pygmy lorises, and the tail is vestigial or absent. The dorsal stripe is faint or absent in some subspecies. Six subspecies of the slender loris are recognized (Hill, 1953; Napier and Napier, 1967; Petter and Petter-Rousseaux, 1979). Groves (1998) questions this and states, for instance, that *L. t. tardigradus* is morphologically distinct from all other forms. Further taxonomic research is necessary.

Table 4: Subspecies of the slender loris (Petter and Petter-Rousseux, 1979; Napier and Napier, 1967; Hill, 1933 and 1953).

Subspecies	Distribution	Morphology
<i>L. t. tardigradus</i>	Southwestern Sri Lanka from Colombo to Ranna	Small; less than 205 mm long, 85-113 g. Russet color with little or no dark median dorsal stripe. Yellowish ears with dusky edges.
<i>L. t. grandis</i>	Gammaduwa, Central Province, Sri Lanka	Longer than 195 mm, 155-198 g. Fuller pelage. The fur is dark gray or brownish-gray with heavy surface frosting but is pure white ventrally. Dusky ears, white rim. Circumocular patches.
<i>L. t. lydekkerianus</i>	South and East India	Largest subspecies, 230-260 mm, 283-340 g. Coloration similar to <i>nordicus</i> . With or without a dark median dorsal stripe. Black ears.
<i>L. t. nordicus</i>	Talawa, North Central Province, Sri Lanka	205-238 mm long, average weight 230 g. Short, ash-gray pelage, with or without white frosting. Usually with dark dorsal stripe. Ears blackish or yellowish.
<i>L. t. nycticeboides</i>	Horton Plains, Central Province, Sri Lanka	204-213 mm long. Appear large due to thick fur, relatively short limbed. Earth-brown pelage and ears completely hidden by fur.
<i>L. t. malabaricus</i>	Western India	220 mm long, 170 g. Russet to wood-brown coat color. Pale throat. Dorsal stripe is absent or barely visible.

Only *L. t. tardigradus*, *L. t. nordicus*, and *L. t. lydekkerianus* have been reported in North American collections. Some smaller reddish or brownish slender lorises have not been positively identified. These may be *L. t. tardigradus*, *L. t. malabaricus*, naturally occurring intermediate forms between *L. t. tardigradus* and *L. t. grandis* or captive-bred mixtures of these forms.

