

Classification of Primates

Traditionally, the order primate is divided into two suborders, *Prosimii* and *Anthropoidea* (Simians). The suborder is an intermediate group between order and family. Below this suborder, we will find infraorder and superfamily. Recently, taxonomists have replaced the term *prosimii* and *anthropoidea* with the term strepsirrhini and haplorhini. Strepsirrhini includes wet nosed non-tarsier prosimians, and the suborder *haplorhini*, includes dry-nosed tarsiers, broad (platyrrhine) and narrow nosed monkeys (catarrhine), apes and the humans. Despite this preferred taxonomic division, the term "prosimii" is still regularly found in textbooks and academic literature because of its familiarity. The word *prosimii* literally means 'Pre-monkey' which refers to the primitive or the lower forms of primates. It includes lemurs, lorises, and other related animals. They were once limited to the tropical regions of the world, including North America. However, they are now found almost in all parts of the world.

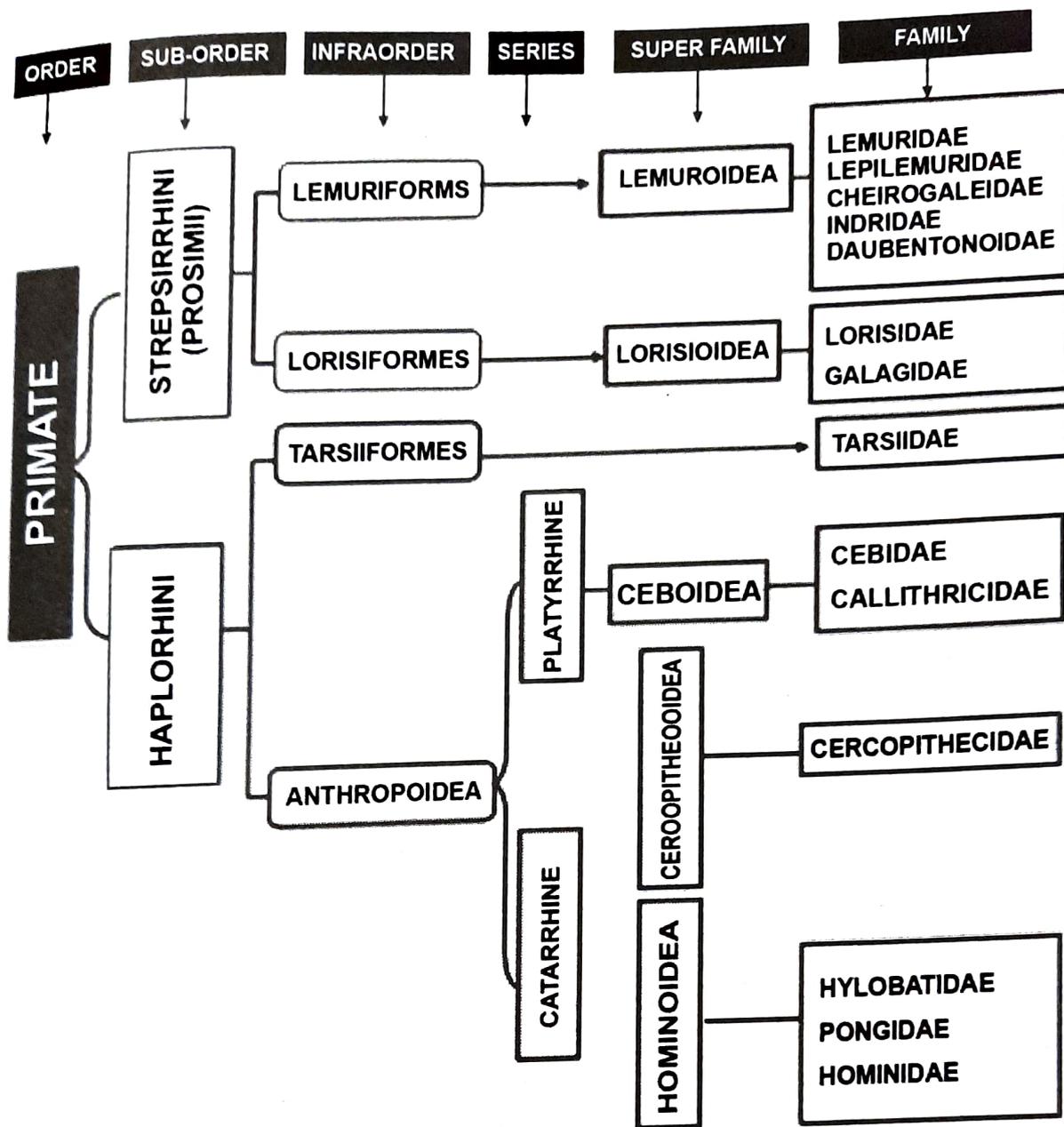


Fig47 : Classification of order Primate

■ Strepsirrhini

Some of the unique characteristics of the strepsirrhines are:

1. The strepsirrhines are comparatively smaller in size than the monkeys and apes.
2. They bear flat nails and fleshy pads on most digits, except the second toe which bears a grooming claw. The exception is the aye aye lemur which has claws on toes.
3. Their first fingers and toes are opposable. The big toe is widely separated from other toes, allowing for a secure grip during locomotion.
4. They have pointed snouts and the sense of smell and hearing are well developed. They are mostly nocturnal terrestrial animals.

5. The eyes are large and are placed laterally. The eyes are surrounded from the back and side by bony rim.
6. The eyes possess a reflective layer called Tapetum lucidum, present on the back of retina.
7. The size of the brain is reduced.
8. They possess a distinctive feature of dentition called 'dental comb' in which incisors and canines in the mandible projected forward and joined together to form a comb like structure.
9. The tail is generally long and bushy.
10. Most of the strepsirrhines are good climbers and leapers.

The suborder Strepsirrhini has two infraorder or series, *Lemuriformes* and *Lorisiformes*. The Lemuriformes has one superfamily *Lemuroidea* and five families, namely, *Lemuridae*, *Lepilemuridae*, *Cheirogaleidae*, *Daubentoniidae* and *Indriidae*. On the other hand, the other superfamily Lorisiformes has two families, viz, *Lorisidae* and *Galagidae*.

Lemuridae: The family Lemuridae has more than 25 species and are found exclusively on the island of Madagascar and the Comoro Islands of South West Africa. True lemur is one of the best representatives of the family Lemuridae. Their size ranges from that of a small to a large domestic cat. Most of them are arboreal and diurnal in nature, herbivorous in diet, mostly eating fruit and some leaves. However, some of them are also terrestrial. Their hands and feet are prehensile. Each hand and feet has five digits with flat nails except the second digit of the foot, which bear a glooming claw. They have long bushy tails that are used for balancing while jumping from one branch to the other.

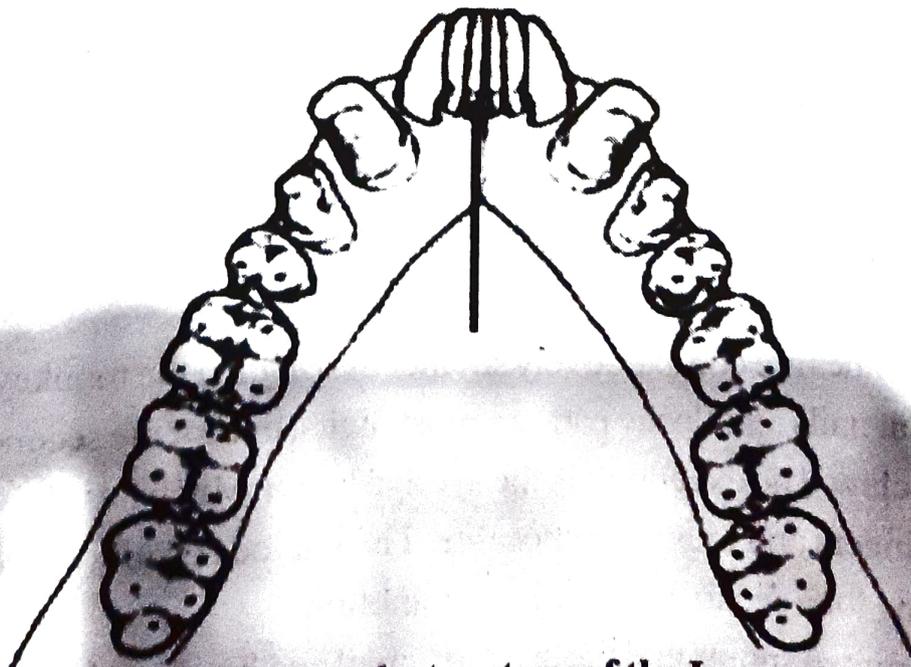


Fig. 48 : Toothcomb structure of the Lemuridae

The dental formula of the lemur is 2-1-2-3/2-1-2-3. The most important distinctive feature of the teeth of the family is the formation of a 'toothcomb' by the teeth (Fig.48). Toothcomb is the dental structure formed by the incisors and the canine that tilt forward in front of the lower jaw, followed by a canine shape first premolar. Their sense of smell is very strong and often marks territorial limits with scent. Regarding their social life, they are found in small form groups consisting of around 20 to 25 numbers. Unlike most other primate species, lemur females generally dominate males in their social interactions.

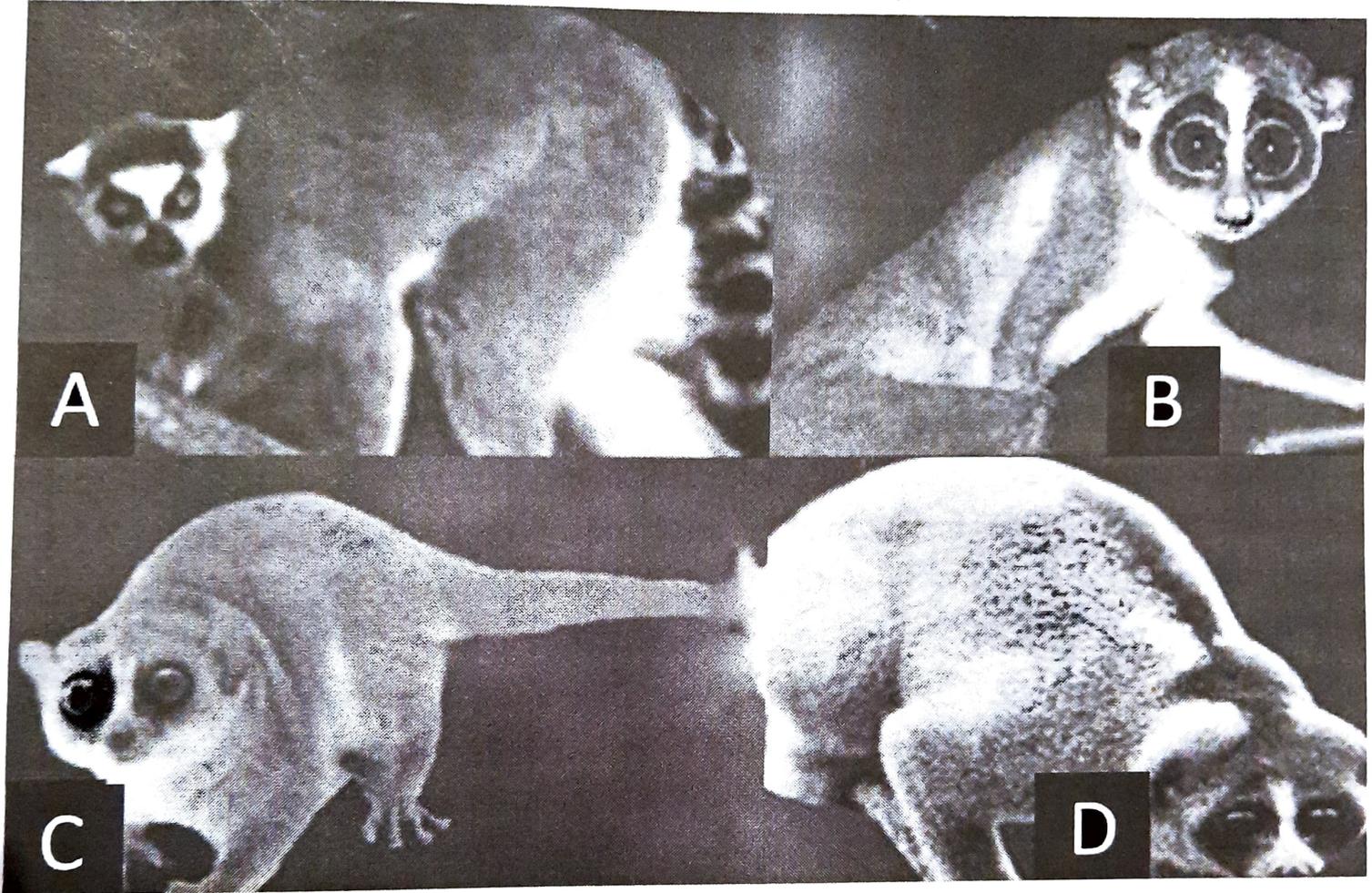


Fig. 49: Strepsirrhines primate: (A) Ring tailed lemur (B) Slow Loris (C) Mouse Loris (D) Slender Loris

● **Cheirogaleidae**

The family Cheirogaleidae consists of the smallest primate species, the *Dwarf* and the *Mouse lemurs*. They are nocturnal animal and found in Madagascar Island. Dwarf lemurs are larger and less active than mouse lemurs. Mouse lemurs (*Microcebus*) are the smallest primates in the world. Their whole body is covered with soft long fur. They have small ears with closely set large eyes surrounded by dark rings. The tapetium lucidum is present in the eyes. The hind legs are long. Like all strepsirrhines, they have fine claws at the second toe of

the hind legs. The tail is very long, sometimes up to one and a half times as long as the body. They weigh no more than 500 grams, with some species weighing as little as 60 grams. Their dental formula is 2-1-3-3/2-1-3-3. Unlike lemurs, they have long upper incisors, although they do have the comb-like teeth typical of all strepsirrhines. The females usually have three pairs of nipples. Their omnivorous diet consists mostly of fruit and easily obtainable animal prey such as insects, frogs, and baby birds in nests. Their average gestation period is 60 days and they give birth to two to four young ones. In captivity, they can live for up to 17-20 years, although their life expectancy in the wild is probably significantly shorter.

● **Indriidae**

The family *Indriidae* includes three groups of species, namely, *indris*, *avahis* and *sifakas*. Like all other lemurs, they are also confined to the island of Madagascar. They are relatively big in size compare to the other prosimians. The indris are the largest in size, reaching about four feet from head to toe and weighing up to 29 pounds (13.2 kg.). All the species of the Indriidae are arboreal. The tails of the different species of this family varies from species to species. The length of the tail of avahi and sifakas are long and almost equal to that of the length of their body, while the tail of the indri is very short. The colours of the skin of the faces are bare and black. The length of the hind limbs exceeds that of the forelimbs. The colour of the fur varies from whitish to reddish and grey. The eye colour is often brown in woolly lemurs, orange or amber in sifakas, and yellow-green in indris. The fur is short, dense, and of various colours including brown, beige, white, orange, and black; often with head crowns, head ruffs, saddle backs, and eyebrows contrasting colours from the rest of the body. The skull of the Indriidae is comparatively shorter and higher than the skull of the lemur. The snout is considerably shorter than the lemur. The gestation period is about five months and they give birth to a single offspring at a time. Indrids are herbivores, eating mostly leaves, fruits and flowers. Females and males usually mate monogamously for many years.

● **Daubentoniidae**

The family Daubentoniidae has only a single species called *Aye-Aye lemur* and are found in the Madagascar Island. Their whole body is covered with long, woolly, black or dark brown fur. They have a very long tail which is almost twice the body length. Its head is rounded with a short and reduced face. Their ears are large, naked and mobile. They have

large eyes with yellowish brown irises. The aye-aye has white around its nose and above its eyes. The aye-aye lemur does not have the specialised 'tooth comb' dentition pattern of the lemurs. The anterior tooth of the aye-aye is unique among the extant prosimians. They completely resemble the dentition of the rodents. The front teeth are large, curved and projecting forward in the maxilla and the mandible. The snout is short compared to the other lemurs. The adult dental formula is $1/0,0/0,1/0,3/3$. The adult incisors are large and ever growing as they are worn down by the aye-aye gnawing on trees. The molar teeth are flattened and have indistinct cusps. The diastema is present posterior to the incisor. The post orbital bar is complete, and the foramen magnum is shifted towards the base of the skull. An aye-aye weighs about 6 pounds (2.7 kilograms). Males and females are about the same size. The length of the upper and lower limbs are of equal size. The fingers of the aye-aye lemurs are five in number with an extremely long thin bony middle finger. All the fingers and toes have pointed claw like nail except for the big toes, which have flat nails. Another unusual feature of the aye-aye lemur is the position of the nipples. It is placed in the lower abdomen instead of the chest. They generally eat insect larvae, fruits, nectar, eggs and bamboo shoots. They are nocturnal and arboreal in habits and most of the time they live on trees.

● **Lepilemuridae**

The family Lepilemuridae has only one extant genus, *Lepilemur* with 26 species. They are found in the forest of Madagascar. Their fur is grey brown or reddish colored on the top and whitish yellow underneath. They typically have a short head with large, round ears. One of the typical dental features of the genus *Lepilemur* is that the upper incisors are reduced in size to small band short cylindrical teeth. The premaxillare is reduced to a mere strip of bone. The lower dentition has procumbent toothcomb. They have relatively long legs and tail. They grow to a length of 30 to 35 cm (with a tail just about as long as their body) and weigh up to 0.9 kg. Tapetum lucidum is present behind the retina. Sportive lemurs are strictly nocturnal and predominantly arboreal moving among the trees with long jumps powered by their strong hind legs. On the ground, they prefer vertical postures and move by quadrupedal running and leaping. During the day they hide in leafy covering or tree hollows. They are mainly folivorous, but they cannot digest cellulose, which is the main component of leaves. They completely depend on the bacteria for digestion of the leaves, which is present in the digestive tract. They give births to a single one at a time. The male *Lepilemur* has a solitary life, while the females live with the offspring. Males usually give loud crow calls during night time.

● **Lorisidae**

The superfamily Lorisioidea has two families, *Lorisidae* and *Galagidae*. The lorises, pottos, angwantbos are the species of the family *Lorisidae*, while galagos is the species of the family *Galagidae*. Lorisids live in tropical, central Africa as well as in south and Southeast Asia. There are five genera and eleven species of *Lorisidae*. The genera are *Arctocebus*, *Perodicticus*, *Pseudopotto*, *Loris* and *Nycticebus*. The whole bodies of the members of the family *Lorisidae* are covered with woolly fur, which is usually grey or brown, darker on the top side. The eyes are large and face forward. The ears are small and often partially hidden in the fur. The thumbs are opposable and the index finger is short. The second toe of the hind legs has a fine claw for grooming, typical for strepsirrhines. Their tail is short or is missing completely. They grow to a length of 17 to 40 cm and a weight in between 0.3 and 2 kg, depending on the species. Their dental formula is 2.1.3.3 and is similar to that of lemurs. They are nocturnal and arboreal. Some lorises move fast and some have slow deliberate movements. Most lorises are solitary or live in small family groups. Lorises have a gestation period of four to six months and give birth to two young one at a time. The life expectancy of lorises can be up to 20 years. The families of the *Lorisioidea* can be distinguished largely on the basis of their style of locomotion. The Asian lorises and their close African relatives, the pottos and angwantibos, are slow, deliberate climbers and creepers on forest branches. Their size is that of a domesticated cat. In contrast, the smaller African galagos, or bush babies, are agile hoppers; they can jump 30 times of their own body length.

● **Galagidae**

The members of the family *Galagidae* are commonly known as bush babies or nagapias and native to continental Africa. Regarding their taxonomic classification, diverse opinions are found among the scholars. Some are of view that the family has one genus with four subgenera, while some others are of opinion that the family have four separate genera. Again in 1996, Shoshani and others in 1996 have assigned four valid genera to the family *Galagidae*. They are *Galagos* (bush babies), *Galagoides* (dwarf bush babies), *Otelemur* (greater bush babies) and *Euoticas* (needle-clawed bush babies). Their whole body is covered with soft and woolly fur. The colour of the fur is darker on the dorsal surface and it ranges from gray to brown in ventral surface. Regarding their morphological characters, they have large forward-directed eyes, suggesting their nocturnal habits. They are characterised by large globular heads, strong hind limbs whose length exceeds the forelimbs, nails on most of the digits,

except for the second toe of the hind foot, which bears a grooming claw. Their pollux (thumb) is non-opposable, their tails are long that help them to balance. The most distinguishing feature of the bush babies is their large mobile ears. They have large membranous folded ears and can move independently. They have relatively largest ears among the primates. They have pectinate (comb-like) incisors called toothcombs, and the dental formula: 2.1.3.3. They are fast, agile creatures. They move through the trees fast leaping from branch to branch in contrast to the slow motion of the loris. Their diet is a mixture of insects and other small animals, fruit, and tree gums. Their gestation period is in between 110–133 days. They give birth to singles, twins, or triplets. Galagos have remarkable jumping abilities. The males and females have their own territory. The female offspring lives with mother, whereas, the male offspring lives with mother only up to the time till they attain puberty.