

## Craniometric Analysis of Two Primate Species from Sri Lanka: *Macaca sinica* and *Trachypithecus vetulus*

Charnalie Nahallage

Department of Sociology and Anthropology, University of Sri Jayewardenepura, Sri Lanka

E-mail: charnalie2@hotmail.com

### Abstract

Anthropoid primates in Sri Lanka belong to the group of Old World Monkeys in the family Cercopithecidae. The more omnivorous macaques belong to the sub-family Cercopithecinae and the folivorous two langur species to Colobinae, respectively. There are marked external morphological differences between the macaque species and two langur species. However, no studies have been conducted to determine the differences from their skeletal morphology. This study attempts to determine the species variation using standard craniometrical measurements. Ten macaque and purple-faced langur crania and 8 macaque and 10 langur mandibles were measured housed at the Department of Sociology and Anthropology University of Sri Jayewardenepura, at the National Museum Colombo and from a private collection. Fifteen cranial and 9 mandibular measurements were taken using a digital sliding caliper. In the cranium, there are statistically significant differences in the muzzle length, nasal breadth, nasal height, piriform height, piriform breadth and inter orbital breadth between these two species. Macaque cranium has a longer muzzle, greater upper facial height and a wider long nose than the langurs. However, the langur cranium has a wider inter orbital distance and narrow piriform aperture than the macaques. In the mandible, there are statistically significant differences between bicondyle breadth, bigonial breadth, bimental eminence breadth and height of ramus. Langur mandibles are taller and wider than macaques. When considering the teeth, both species have bilophodont teeth; nevertheless langur teeth have higher cusps than macaques. This is directly related to their dietary specialization and is used to distinguish between Cercopithecines and Colobines. These cranial and mandibular measurements and dental morphology are very important for the identification of different primate species from the bones excavated from prehistoric cave sites in Sri Lanka.

### Introduction

For its small geographical size Sri Lanka is home to five primate species represented by 12 subspecies distributed throughout the country. They are the toque macaque species (*Macaca sinica*) with three sub species (*Macaca sinica sinica*, *Macaca sinica aurifrons*, *Macaca sinica opistomelas*), purple-faced leaf langur (*Trachypithecus vetulus*) with four sub species (*Trachypithecus vetulus*, *Trachypithecus vetulus vetulus*, *Trachypithecus vetulus nestor*, *Trachypithecus vetulus philbriki* and *Trachypithecus vetulus monticolar*), gray langur (*Semnopithecus priam*), of the two loris species *Loris tardigradus* with two sub species (*Loris tardigradus tardigradus*, *Loris tardigradus nycticeboides*) and *Loris lydekkerianus* is represented by *Loris lydekkerianus nordicus* and *Loris lydekkerianus grandis* (Molur *et al.* 2003, Nahallage *et al.* 2008).

The three diurnal species belong to the Infra order Catarrhini (Old World Monkeys), the name is derived from the shape of the nostrils, which are usually narrow and

facing downward rather than round and facing laterally as in most New World Monkeys. In their dentition they have two premolars in each quadrant. The Cercopithecoid monkeys have several anatomical features that distinguish them from apes and humans. Most prominent are their specialized molar teeth, in which the anterior two cusps and posterior two cusps are aligned to form two ridges or lophs and called as bilophodont teeth. In cranial anatomy Old World Monkeys have relatively narrow nasal openings and narrow tooth rows compared to the apes.

Old World monkeys are divided into two sub families: the Cercopithecines or cheek-pouch monkeys and the Colobines or leaf – eating monkeys. Many of their differences are related to basic dietary adaptations. The colobines are mainly leaf and seed eaters, whereas the Cercopithecines are predominantly fruit eaters (Napier and Napier 1967; Goldstein *et al.* 1987; Smith 1983). Cercopithecines have cheek pouches, shorter guts to digest fruits (Caton 1998; Kay and Davis 1994), broader incisor teeth and molar teeth with high crowns and relatively low cusps, whereas Colobines have no cheek pouches, narrow incisors and molar teeth with high cusps (Hylander 1975;

Received : 16-07-2014

Revised : 27-01-2015

Accepted : 22-02-2015