

= Babakotia =

Babakotia is an extinct genus of medium @-@ sized lemur , or strepsirrhine primate , from Madagascar that contains a single species , Babakotia radofilai . Together with Palaeopropithecus , Archaeoindris , and Mesopropithecus , it forms the family Palaeopropithecidae , commonly known as the sloth lemurs . The name Babakotia comes from the Malagasy name for the indri , babakoto , to which it and all other sloth lemurs are closely related . Due to its mix of morphological traits that show intermediate stages between the slow @-@ moving smaller sloth lemurs and the suspensory large sloth lemurs , it has helped determine the relationship between both groups and the closely related and extinct monkey lemurs .

Babakotia radofilai and all other sloth lemurs share many traits with living sloths , demonstrating convergent evolution . It had long forearms , curved digits , and highly mobile hip and ankle joints . Its skull was more heavily built than that of indriids , but not as much as in the larger sloth lemurs . Its dentition is similar to that of all other indriids and sloth lemurs . It lived in the northern part of Madagascar and shared its range with at least two other sloth lemur species , Palaeopropithecus ingens and Mesopropithecus dolichobrachion . Babakotia radofilai was primarily a leaf @-@ eater ( folivore ) , though it also ate fruit and hard seeds . It is known only from subfossil remains and may have died out shortly after the arrival of humans on the island , but not enough radiocarbon dating has been done with this species to know for certain .

= = Etymology = =

The name of the genus Babakotia derives from the Malagasy common name for the Indri , babakoto , a close relative of Babakotia . The species name , radofilai , was chosen in honor of French mathematician and expatriate Jean Radofilao , an avid spelunker who mapped the caves where remains of Babakotia radofilai were first found .

= = Classification and phylogeny = =

Babakotia radofilai is the sole member of the genus Babakotia and belongs to the family Palaeopropithecidae , which includes three other genera of sloth lemurs : Palaeopropithecus , Archaeoindris , and Mesopropithecus . This family in turn belongs to the infraorder Lemuriformes , which includes all the Malagasy lemurs .

The first subfossil remains of Babakotia radofilai were discovered as part of a series of expeditions following upon discoveries of Jean Radofilao and two Anglo @-@ Malagasy reconnaissance expeditions in 1981 and 1986 ? 7 . The second wave of research was launched in the 1980s by biological anthropologist Elwyn L. Simons who unearthed in 1988 at a cave known as Antsiroandoha in the Ankarana Massif , northern Madagascar a nearly complete skeleton and skull in addition to the remains of roughly a dozen other individuals . Identified immediately as a sloth lemur ( palaeopropithecid ) upon its discovery , Babakotia along with Mesopropithecus helped to settle a debate about the relationship between the sloth lemurs , the monkey lemurs ( family Archaeolemuridae ) and the living indriids . The monkey lemurs had skulls that more closely resembled the indriids , but their teeth were very specialized and unlike those of the indriids . The larger sloth lemurs , on the other hand , retained a dentition similar to living indriids , yet differed by having more robust and specialized skulls . Babakotia and Mesopropithecus not only shared the indriid dentition , but also the indriid @-@ like skulls , providing evidence that sloth lemurs were most closely related to living indriids , with monkey lemurs as a sister group to both . Furthermore , the discovery of Babakotia helped to demonstrate that the ancestral indriids were not " ricochetal leapers " ( bouncing rapidly from tree to tree ) like living indriids , but vertical climbers and hanging feeders , and possibly occasional leapers .

= = Anatomy and physiology = =

Weighing between 16 and 20 kg ( 35 and 44 lb ) , *Babakotia radofilai* was a medium @-@ sized lemur and noticeably smaller than the large sloth lemurs ( *Archaeoindris* and *Palaeopropithecus* ) , but larger than the small sloth lemurs ( *Mesopropithecus* ) . In many ways , it had an intermediate level of adaptations for suspensory behavior between the large sloth lemurs and the small sloth lemurs . This includes its highly mobile hip and ankle joints , as well as other specializations in the vertebral column , pelvis , and limbs . Its forelimbs were 20 % longer than its hind limbs , giving it a higher intermembral index ( ~ 119 ) than *Mesopropithecus* ( ~ 97 to 113 ) , suggesting that it was convergently similar to arboreal sloths . It had a reduced tarsus and curved , elongated digits , adapted for grasping and suggesting suspensory behavior . Its hind feet were reduced , making it well @-@ adapted for climbing and hanging ( like in other palaeopropithecids ) , but not leaping ( like in indriids ) . Wrist bones found in 1999 further demonstrated that this species was a vertical climber . Additionally , analysis of its semicircular canals , lumbar vertebrae and its spinous processes indicate slow movement and climbing ( antipronograde ) adaptations , but not necessarily sloth @-@ like hanging , vertical clinging , or leaping . Therefore , it was likely a slow climber like a loris and also exhibited some suspensory behavior like a sloth .

All sloth lemurs have relatively robust skulls compared to the indriids , yet despite shared cranial features with the larger sloth lemurs , its skull still resembles that of an indri . The cranial traits shared with the other sloth lemurs include relatively small orbits , robust zygomatic arches , and a mostly rectangular hard palate . The small orbits taken into consideration with the relative size of the optic canal suggest that *Babakotia* had low visual acuity , which is typical for lemurs . The skull length averages 144 mm ( 5 @. @ 7 in ) .

The dental formula of *Babakotia radofilai* was the same as the other sloth lemurs and indriids : either 2 @. @ 1 @. @ 2 @. @ 31 @. @ 1 @. @ 2 @. @ 3 or 2 @. @ 1 @. @ 2 @. @ 32 @. @ 0 @. @ 2 @. @ 3  $\times$  2 = 30 . It is unclear whether one of the teeth in the permanent dentition is an incisor or canine , resulting in these two conflicting dental formulae . Regardless , the lack of either a lower canine or incisor results in a four @-@ tooth toothcomb instead of the more typical six @-@ tooth strepsirrhine toothcomb . *Babakotia radofilai* differed slightly from indriids in having somewhat elongated premolars . Its cheek teeth had broad shearing crests and crenulated enamel .

= = Distribution and ecology = =

Like all other lemurs , *Babakotia radofilai* was endemic to Madagascar . Its remains have only been found in limestone caves at the Ankarana Massif within the Ankarana Reserve and at Anjohibe , indicating a range across the extreme north and northwest of the island . The restricted range of this arboreal primate , particularly during a time when much of the island was blanketed in forest , might have been due to habitat specificity , competitive exclusion , or some other unknown factor . It was sympatric ( occurred together ) with *Palaeopropithecus maximus* and *Mesopropithecus dolichobrachion* .

Based on its size , the morphology of its molars , and microwear analysis on its teeth , *Babakotia radofilai* was likely a folivore , while supplementing its diet with fruit and hard seeds . In all sloth lemurs , including *Babakotia radofilai* , the permanent teeth erupted early , a trait seen in indriids that improves survivability of juveniles during the first dry season following weaning .

= = Extinction = =

Because it died out relatively recently and is only known from subfossil remains , it is considered to be a modern form of Malagasy lemur . *Babakotia radofilai* lived during the Holocene epoch and is thought to have disappeared shortly after the arrival of humans to the island , possibly within the last 1000 years . However , the only radiocarbon date that has been reported for it dates back to about 3100 ? 2800 BCE .