

Primates were always tree-dwellers

Rare ankle bone fossil of oldest-known primate suggests it was arboreal.

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Primates love to climb and most make their homes high up in the branches of trees, yet when this habit started has been a contentious issue. Now, the discovery of some ankle bones is making it look likely that primates were arboreal from the very beginning.

The earliest primate, *Purgatorius*, lived around 65 million years ago and is well known from the same fossil beds in Montana that yield tyrannosaurs just a few metres deeper down. Numerous fossils of the genus have been found but, as is typical with mammals, they have all been teeth that survived owing to the presence of protective enamel. The teeth have provided enough information for palaeontologists to say that the animals ate insects and plants, but have yielded little information on where the creatures lived. The ankle bones change that.

Found in several museum trays of unidentified bones collected from the Garbani Channel fossil location in Montana by field crews led by William Clemens at the University of California, Berkeley, the ankle bones are the right size for pairing with all of the teeth that have been collected in the same area and look a lot like the ankles of later primates. These features led Stephen Chester at Yale University in New Haven, Connecticut, and Jonathan Bloch at the University of Florida in Gainesville, the palaeontologists who found the bones, to identify them as belonging to *Purgatorius*. They presented their findings at the annual meeting of the Society of Vertebrate Paleontology in Raleigh, North Carolina, last week.

Other palaeontologists generally agree with their assessment. "I buy it. These guys certainly know their morphology," says palaeontologist Robert Anemone at Western Michigan University in Kalamazoo.

"The anatomy of these specimens certainly matches that of known Paleocene primates, but a skull or a full skeleton would tell us so much more," adds palaeontologist Kenneth Rose at Johns Hopkins University in Baltimore, Maryland.

Primate or not, the ankle bones suggest considerable flexibility. "This animal's foot clearly had a wide range of motion," explains Chester. The presence of such a wide range of motion is important because it is a crucial feature that allows tree-dwellers to readily adjust their feet to the precarious, and often uneven, branches. Moreover, the trait is found almost exclusively in arboreal animals.

"We really think this closes the question of where the first primates were living," says Chester. Yet why they lived in trees is still being explored.

"They weren't being chased up there by dinosaurs. They had teeth that were well adapted to eating plants, so the obvious argument to make is that they were going after food," says Anemone.

The team behind the identification of the fossils point out that flowering plants went through a period of major diversification just when *Purgatorius* was emerging. "We think there is a connection here between primates and plant evolution, with fruits playing a role in luring them up," says Bloch. Proving that point is going to take many more *Purgatorius* fossils, but if there is one thing the team is not short of, it is bones.

"We've still got an immense collection of unidentified bones to sort through," says Clemens.



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The earliest primates seemed to have ankles well suited for life in trees.