

## **New Species of Eocene Primates and the Phylogeny of European Adapidae**

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*Abstract.* Restudy of virtually all of the important collections of European Eocene primates of the family Adapidae indicates that 28 valid species in 8 genera are now known, spanning a time period of nearly 20 million years. The biostratigraphic distribution of each species has been studied in the context of established reference levels, and a maximum of four evolutionary lineages are known from any one locality. Ten new species are proposed in the genera *Pelycodus* (1 sp.), *Protoadapis* (4 sp.), *Periconodon* (2 sp.), *Anchomomys* (1 sp.), and *Adapis* (2 sp.). Phylogenetic relationships among the species, based on stratophenetic linking, are indicated whenever possible.

### *Introduction*

The first illustration and description of a fossil primate was published by CUVIER in 1812. Ten years later he named the specimen *Adapis*, thinking that it was a small pachyderm perhaps related to hyraxes. Exactly 50 years after CUVIER'S first description of *Adapis*, RÜTIMEYER [1862] described a fossil specimen from slightly older sediments as *Caenopithecus lemuroides*. This was the first species to be recognized as a fossil lemuriform primate, although RÜTIMEYER emphasized the possibility that it might at the same time be related to higher primates. Fifty years later STEHLIN [1912] described the cranial anatomy of *Adapis* in one of the most complete descriptions of a fossil primate genus ever published. At the end of still another 50-year period, SIMONS [1962] reviewed the Eocene lemuriform primates of Europe.

Since 1962, an enormous quantity of new adapid material has been collected and described in Europe by RUSSELL *et al.* [1967], SUDRE [1969],

SCHMIDT-KITTLER [1971], CRAY [1973], CRUSAFONT-PAIRÓ and GOLPE-POSSE [1975], and others. In addition, the relative biostratigraphic position of many of the European localities yielding Adapidae is now well established, following detailed studies by THALER [1966], FRANZEN [1968], HARTENBERGER [1973], CROCHET *et al.* [1975], and others [see especially FAHLBUSCH, 1976]. As a result, it is now possible to discuss the phylogenetic history of the Adapidae in much more detail than was possible previously. The purpose of this paper is to record a number of new species, and to outline the phylogenetic relationships of the genera and species of European Adapidae.

Institutional abbreviations used in this paper are as follows: Basel – Naturhistorisches Museum, Basel (Switzerland); BMNH – British Museum (Natural History), London (England); Halle – Geiseltal Museum, Halle (GDR); Louis – Private collection of P. LOUIS in Cormicy near Reims (France); Louvain – Laboratorium voor Actuepaleontologie, Katholieke Universiteit, Louvain (Belgium); Lyon – Université Claude Bernard, Lyon (France); MNHN – Institut de Paléontologie, Muséum National d'Histoire Naturelle, Paris (France); Montpellier – Laboratoire de Paléontologie, Université de Montpellier, Montpellier (France); Munich – Universitätsinstitut für Paläontologie, Munich (FRG); Sabadell – Instituto Paleontología, Sabadell (Spain); UCM – Museum of Paleontology, University of California, Berkeley, Calif. (USA).

### *Species of European Adapidae*

The family Adapidae, as now known, includes 28 European species placed in 8 genera. The valid genera and species of European Adapidae are listed in table I. Of these 28 species, 9 are here newly described, and a replacement name is proposed for one preoccupied species name. SZALAY [1974] recently proposed that *Anchomomys* (?) *quercyi* be placed in the new genus *Huerzeleris*, that *Adapis sciureus* be placed in the new genus *Microadapis*, and that *Adapis magnus*, *A. priscus*, and *A. ruetimeyeri* be placed in GERVAIS' genus *Leptadapis*. WILSON and SZALAY [1976] also placed *Protoadapis klatti* in WEIGELT's genus *Europolemur*. The result is that the genera *Huerzeleris*, *Microadapis*, *Adapis*, and *Europolemur* are all monotypic, each including but a single species. These four genera are not recognized in this study because, given present knowledge of phylogenetic relationships, their recognition obscures rather than clarifies the unified nature of the adapid radiation. However, it is necessary to retain *Caenopithecus* [RÜTIMEYER, 1862], *Pronycticebus* [GRANDIDIER, 1904], and

Table I. The European species of Eocene Adapidae

Species	Type locality (reference level)
<i>Protoadapis</i> group	
1. <i>Pelycodus eppi</i> [COOPER, 1932]	Abbey Wood (Dormaal)
2. <i>Pelycodus savagei</i> sp. nov.	Avenay (Mutigny-Avenay-Grauves)
3. <i>Protoadapis russelli</i> sp. nov.	Avenay (Avenay)
4. <i>Protoadapis louisi</i> sp. nov.	Avenay (Avenay)
5. <i>Protoadapis recticuspidens</i> [LEMOINE, 1878]	? (Grauves)
6. <i>Protoadapis curvicuspidens</i> [LEMOINE, 1878]	? (Grauves)
7. <i>Protoadapis klatti</i> [WEIGELT, 1933]	Geiseltal (Geiseltal-Bouxwiller)
8. <i>Protoadapis weigelti</i> sp. nov.	Geiseltal (Geiseltal)
9. <i>Protoadapis filholi</i> nom. nov.	'Quercy' (?)
10. ' <i>Protoadapis</i> ' <i>ulmensis</i> [SCHMIDT-KITTLER, 1971]	Ehrenstein 1A (La Debruge)
11. <i>Periconodon lemoinei</i> sp. nov.	Grauves (Grauves)
12. <i>Periconodon roselli</i> [CRUSAFONT-PAIRÓ, 1967]	Las Saleres (Geiseltal)
13. <i>Periconodon huerzeleri</i> sp. nov.	Bouxwiller (Bouxwiller)
14. <i>Periconodon pygmaeus</i> [RÜTIMEYER, 1890]	Egerkingen-Cartier (Egerkingen I)
15. <i>Anchomomys stehlini</i> sp. nov.	Egerkingen-γ (Egerkingen II)
16. <i>Anchomomys gaillardi</i> [STEHLIN, 1916]	Lissieu (Lissieu)
17. <i>Anchomomys</i> (?) <i>quercyi</i> [STEHLIN, 1916]	'Quercy' (?)
18. <i>Caenopithecus lemuroides</i> [RÜTIMEYER, 1862]	Egerkingen-Cartier (Bouxwiller-Egerkingen I & II)
19. <i>Pronycticebus gaudryi</i> [GRANDIDIER, 1904]	Memerlein (Euzet)
20. <i>Cercamomys brachyrhynchus</i> [STEHLIN, 1912]	Prajous (Euzet)
<i>Adapis</i> group	
21. <i>Adapis sciureus</i> [STEHLIN, 1916]	Egerkingen-γ (Egerkingen II)
22. <i>Adapis priscus</i> [STEHLIN, 1916]	Egerkingen-γ (Egerkingen II)
23. <i>Adapis ruetimeyeri</i> [STEHLIN, 1912]	Egerkingen-α (? Lissieu)
24. <i>Adapis sudrei</i> sp. nov.	Robiac (Robiac)
25. <i>Adapis laharpei</i> [PICTET and HUMBERT, 1869]	Eclépens (Le Bretou)
26. <i>Adapis magnus</i> [FILHOL, 1874]	'Quercy' (Euzet)
27. <i>Adapis stintoni</i> sp. nov.	Headon Lignite Bed (La Debruge)
28. <i>Adapis parisiensis</i> <sup>1</sup> [BLAINVILLE, 1849]	Montmartre (Montmartre)

<sup>1</sup> It may eventually be necessary to recognize *Adapis angustidens* [FILHOL, 1883] and *Adapis betillei* [DELFORTRIE, 1873] as species distinct from *Adapis parisiensis*.

*Cercamomius* [GINGERICH, 1975] as monotypic genera because of their distinctive specializations.

New species of Adapidae are briefly diagnosed and figured in this paper. More complete data on dental variation, cranial anatomy, and evolutionary