LATE PALEOCENE AND EARLIEST EOCENE ANGIOSPERM POLLEN DISTRIBUTIONS IN SOUTHEASTERN NORTH AMERICA: BIOLOGICAL AND PALEOCLIMATIC IMPLICATIONS

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Thirty-one new samples from the eastern Gulf Coast, mainly from Mississippi, have been examined for angiosperm pollen content. Samples from east-central Mississippi were especially valuable because in this updip area the Paleocene-Eocene (P-E) boundary disconformity represents only a small hiatus; thus, the resolution of taxon diversity changes and turnover rates near the boundary is much better than in Alabama where most of the eastern Gulf Coast upper Paleocene and lower Eocene stratigraphic units have their type localities.

At least six Eocene indicator taxa are now known to range down to within 0.5 m above the P-E boundary. Migrations from both north and south had a great effect on the North American flora not only in the early Eocene, as previously believed, but also during the late Paleocene. It now appears that distinct warming of the terrestrial climate began earlier in the late Paleocene than previously known, at least on the Gulf Coast, and that plant migration northward from the Tethys Seaway preceded the main pulse of migration from Europe over the Greenland land bridge. The evidence is as follows: Eight pollen taxa generally thought of as being Eocene are now known from the upper Paleocene of Mississippi and Alabama. Three of them (*Longapertites*, *Proxapertites*, and *Psilodiporites iszkaszentgyorgyi*), mainly monocots, had first appearances probably no later than ~56-57 Ma, having migrated to the Gulf Coast from the Caribbean region. The other "Eocene" taxa in the upper Paleocene, mainly produced by dicot Juglandaceae (walnut family), had first appearances at ~55.2-55.3 Ma (the P-E boundary is taken as 55 Ma), most of them having migrated to eastern North America from Europe over the Greenland land bridge, although a few probably evolved in eastern North America.

The many last appearances of pollen taxa immediately below the P-E boundary led to a sudden diversity drop evidently within a few hundred kyr of the end of the Paleocene. Thus, the warming event presumably responsible for the strong pulse of first and last appearances was apparently very intense during the latest Paleocene, or else the cumulative effect of late Paleocene warming and arrival of plant migrants led to a sudden partial ecosystem collapse in the latest Paleocene.