

than the present level. All that remained of the peninsula was part of Trail Ridge, which formed a large, pear-shaped promontory in Bradford and Clay Counties; there were three irregular, roughly parallel ridges in Polk and Highlands Counties in Central Florida; high hills between Dade City and Brooksville in Pasco and Hernando Counties stood as islands; to the north numerous small hills stood above the 150 foot level; and a large expanse of rocks of the Hawthorne Formation formed an island farther north in Alachua County.

The Wicomico Shore line (Cooke, 1945: 281, fig. 44) is the least sharply defined of the shores recognized by MacNeil, which might indicate that the sea stood at this level for a comparatively short time. It was formed during the Pliocene (Alt, 1968: 92) when the sea level was 90 to 100 feet higher than the present level. Florida was again reduced to a number of islands in Pasco, Hernando, Citrus, Sumter, and Marion Counties. Hubbell (1954: 48, 49 [in] Olson et al; 1956: 86), in sophisticated papers on the flightless dung beetle, genus *Mycotrupes*, concluded on zoogeographical evidence that the five species that now live on "islands" of sandy plains or hills separated by marshes or other nonsandy habitats, evolved on actual islands in the interglacial seas and that some land areas persisted in Florida throughout the Pleistocene. Swift (1970: 325) said of a total primary freshwater fauna of 47 species that now inhabits either the St. Johns or Suwannee rivers or both, "Only three species of primary fresh water fishes apparently arose in south or central Florida" and supported the view of moderate Pleistocene flooding. Thompson (1968: 15), on the basis of the distribution of 35 species of Floridian Hydrobiidae, a group of fresh and brackish water snails, suggested that a peninsula persisted throughout the Pleistocene and refuted the marine origin of any of the terraces other than the Pamlico. My interpretation of his data, (with the exception of the two species *Hyalopyrgus brevissimus* (Pilsbry) and *H. aequicostatus* (Pilsbry) that may have had refugia, or else speciated on islands in the Wicomico sea) is that many of the species migrated into peninsular Florida after Wicomico flooding. A number of the species have not fully occupied the older part of the peninsula, nor penetrated beyond the Pamlico Terrace, which suggests a rather recent repopulation probably from the west and north. Among the 12 species of Unionidae, aside from *Elliptio buckleyi* (Lea), which may have persisted on the peninsula prior to the Pliocene¹, and *Villosa amygdala* (Lea), which may have speciated from *V. lienosa* (Conrad) on one of the larger land masses, the remaining species have repopulated the peninsula since Wicomico flooding.

The Pamlico Shore Line (Cooke, 1945: 297, fig. 47), the best preserved of the Pleistocene shores, was formed during the Yarmouth interglacial stage when the sea was 20 to 30 feet above present levels. At this time the shape of Florida was much as it is today, except that the

¹ *Unio caloosawensis* Dall (1895. Trans. Wagner Free Inst. Sci., 3 (3): 688, pl. 25, figs. 5, 12b found in the Pliocene marls of the Caloosahatchie River) is either *E. buckleyi* (Lea) or very close to it.