

Subtidal Ichnology of a Modern Tidal – Fluvial Transition Zone: Ogeechee Estuary, Georgia, U.S.A.

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Summary

The vast contrast between the freshwater reaches of estuaries, characterized by low ichnological diversity, and estuarine mouths, which display ichnological suites comparable to diverse, fully marine environments, has been observed in the Ogeechee Estuary, GA, USA. This ichnological gradation in the tidal – fluvial transition zone can be very useful in paleoenvironmental reconstructions, as well as a useful analogue for oil and gas exploration and reservoir development.

The Ogeechee River Estuary has been revisited to study the subtidal deposits of the tidal – fluvial transition zone in detail, as the subtidal has the greatest preservation potential. Modern subtidal sediments were sampled in July 2007 using a ship-operated Senckenberg box corer. The steel sample boxes used were 55 cm wide, 30 cm deep, and penetrated up to 70 cm. The cores were x-radiographed and then impregnated with resin to produce sediment resin peels.

These subtidal cores have been used to characterize the subtidal ichnological progression of the estuary. The outer estuary comprises fine – grained sand and may include shelly material. Abundance of burrows is low, but diversity is high. Burrows of shrimp (making traces similar to *Thalassinoides*) and bioturbation by brittle stars are common. The middle estuary is relatively coarser grained and also displays a diverse assortment of burrowers. Many worm burrows are present, making traces similar to *Skolithos*, *Palaeophycus*, and *Planolites*, as well as a great deal of reworking due to cryptic bioturbation. The upper estuary displays more riverine influence, with low diversity and higher abundances. Sands are coarser grained and cut by long vertical worm burrows, similar to *Skolithos*.

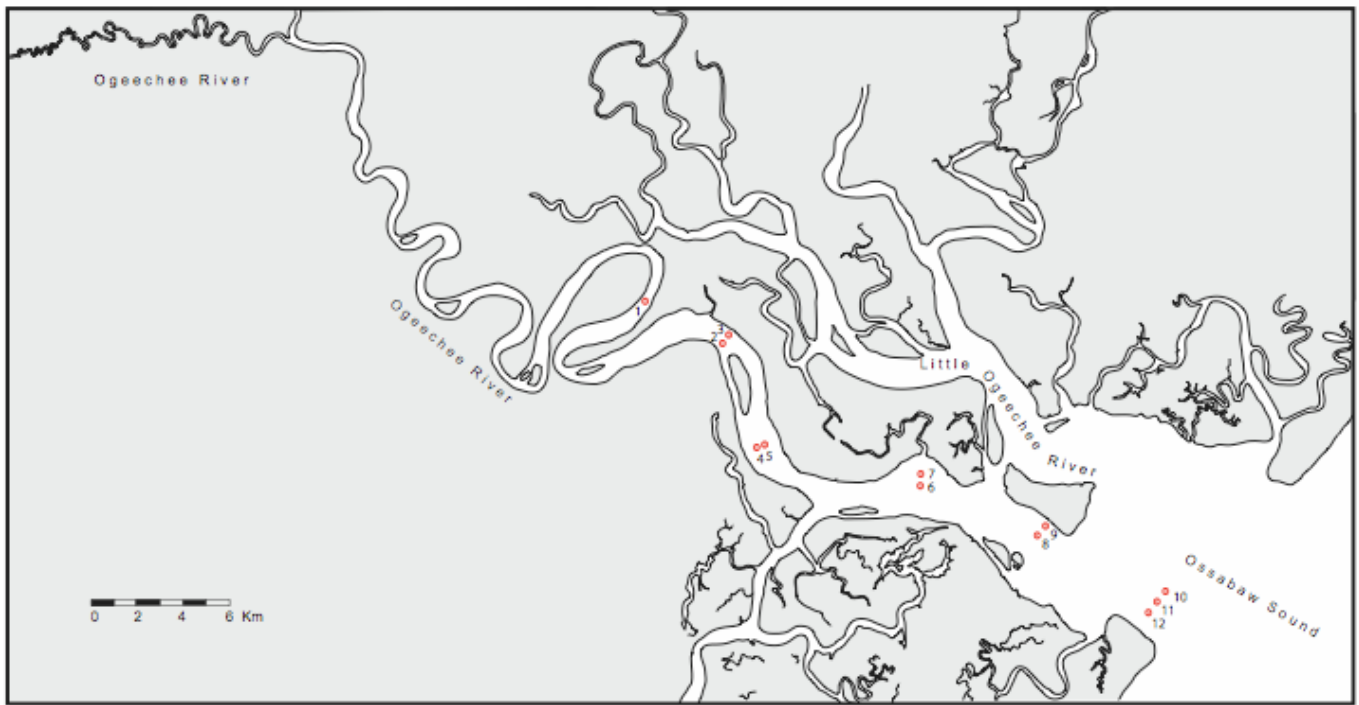


Figure1: Study area map of the Ogeechee Estuary, Georgia, USA. Red circles indicate locations of subtidal cores collected within the Ogeechee River Estuary July 2007.