

Sediment capture in flood plains of the Mississippi River: A case study in Cat Island National Wildlife Refuge, Louisiana

MATTHEW SMITH¹ & SAMUEL J. BENTLEY, Sr.^{1,2}

1 Department of Geology and Geophysics, Louisiana State University, Baton Rouge, Louisiana USA

2 Coastal Studies Institute, Louisiana State University, Baton Rouge, Louisiana, USA

sjb@lsu.edu

Abstract To plan restoration of the Mississippi River Delta, it is imperative to know how much sediment the Mississippi River currently provides. Recent research has demonstrated that between Tarbert Landing and St Francisville on the Mississippi, as much as 67 million metric tons (Mt) per year is lost from river transport, of which ~16 Mt is muddy suspended sediment. So where does this sediment go? Two pathways for loss have been proposed: riverbed storage, and overbank deposition in regions that lack manmade levées. Cat Island National Wildlife Refuge, on the unleveed Mississippi River east bank near St Francisville, Louisiana, consists of undisturbed bottomland forest that is inundated most years by river flooding. To determine fluvial sediment accumulation rates (SAR) from flooding, pushcores 40–50 cm long were collected then dated by Pb-210 and Cs-137 geochronology. Preliminary data suggests that muddy sediment accumulation is 10–13% of muddy suspended sediment lost from river transport along this river reach.

Key words Mississippi River; flood plain; sediment accumulation; Pb-210; Cs-137