Goose Point, Louisiana - A Geo-ecological Model for Landscape Level Plant Community Succession Driven by Fault Movement Associated with the Baton Rouge Fault System

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The signature of subsidence, so common to south Louisiana, is present at Goose Point. This paper discusses possible fault-driven subsidence along the Baton Rouge Fault System as a driving mechanism for vegetation change and marsh loss at Goose Point. Goose Point, Louisiana is located on the north shore of Lake Pontchartrain about 32 kilometers (20 miles) north of New Orleans, Louisiana. In the 1950's Goose Point was a stopover for geese migrating through the north shore of Lake Pontchartrain. The huge flocks fattened up on the vast acres of three cornered grass (Shoenoplexus americanus) (Glockner 2008). Today the three cornered grass has been nearly completely replaced by salt meadow cord grass (Spartina patens). Not surprisingly, few geese visit the area today.

What makes Goose Point so interesting is what is not present. The possible causes of coastal land loss in Louisiana usually include factors such as levees, fluid extraction and salt water intrusion. However, Goose Point's marsh losses cannot be attributed to any of the typically assigned surface or near surface causes because none of these factors exist at Goose Point. Therefore, the more likely causes responsible for the land and plant losses must be something bigger and deeper. Tectonic deformation associated with the Mississippi River Delta and perhaps more directly, faulting associated with onshore segments of the Baton Rouge Fault, better explain these losses than any of the conventional assigned causes of land loss.

The Baton Rouge Fault System trends northwest - southeast along the north shore of the lake with active fault segments through the lake (Lopez 1996). Prominent lineaments have been mapped as onshore components of the Baton Rouge Fault System (Saucier 1994, Gagliano et al. 2003). These features are very distinctive on the 1998 LIDAR flown by the state of Louisiana. Goose Point and its remaining associated marshes are all downthrown to these faults in the Baton Rouge Fault System.

This presentation stresses the role of tectonics in land loss at Goose Point. However, the general lack of geological input in land loss studies throughout coastal Louisiana is glaring. Until tectonics is integrated into land loss models, coastal restoration efforts will continue to under perform or fail.