LONG ISLAND'S CAROLINA BAYS AND THE YOUNGER DRYAS IMPACT EVENT

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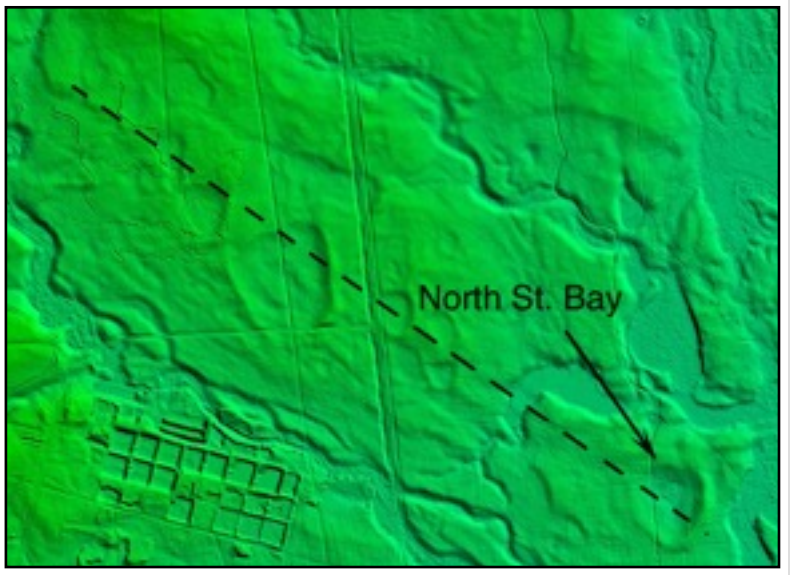
Recent studies have documented the existence of Carolina Bay like structures across portions of eastern Suffolk County. Unlike kettles these features rarely exceed 4ft of relief and have similar bell-shaped appearances as well as rims that extend around the entirety of the depression. Like Carolina bays found along the southern east coast, Long Island's bays appear to be arranged with parallel long axes trending in a south-easterly direction. Their shape and arrangement is highly suggestive of an impact-related formation and may be related to the Younger Dryas extinction event suggested by Firestone (2007).



DEM of North St Bay showing linear pattern of bays and position of the North St Bay. Dotted path showing 120° bearing.

The formation of Carolina Bays is still not fully understood and research has provided numerous mechanisms including the charging of ground water, thermal karst activity, prograding lake shores with dune accretion, and impact cratering(Rodriguez, 2012). Debate over the most controversial mechanism, impact cratering, was reignited by Firestone (Firestone, 2007) when it was proposed that an extraterrestrial impact occurred 12,900 years ago over the Laurentide Ice Sheet and eventually lead to Younger Dryas cooling event, extinction of the North American megafauna, and the decline of clovis culture.

Since Firestone's initial publication, researchers have noted the presence of scoria-like objects (SLO's) within the sediment at AYD boundary sites in Syria, South Carolina, and Pennsylvania that also contained microspherules and magnetic grains(Bunch, 2012). Similar materials have been recovered from suspected Carolina Bays on Long Island. Although a number of studies have suggested alternative origins for these materials none have explained their peak abundances at the AYD boundary or processes that would provide their deposition on regional scales.

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