



BUCKHORN GARDEN SERVICE, INC.

geographic consultant –
land, people, and plants

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Attn.: Mr. Joseph Arsenault, botanist
961 Clark Avenue
Franklinville, NJ 08322

Dear Joseph,

I have been asked to contribute two paragraphs about late- and post-glacial land dynamics of New Jersey, with emphasis on how this relates to botanical interests. The following is a proposed draft:

At least three times during the last million years northern New Jersey was covered to considerable depth by the massive Laurentide ice sheet, scouring away soil and rock as it surged. Ice marginal terrain south of this ice sheet would have been subjected to cold, dry, and windy (*i.e.*, periglacial) conditions. There is evidence that at least three episodes of perennially frozen ground or “permafrost” had been present over the last 200,000 years, the frozen layer at times reaching depths of 10 to 30 meters (30 to 100 feet) or more. Strong air-density driven katabatic winds flowed off the Laurentide, deflating and redeposited thin windblown bedforms of sands and silts. The rigorous periglacial realm extended beyond Cape May Point (Newell et al., 2000; French et al., 2003, 2007), creating an unusual suite of landforms (e.g., dunes, blowouts, snowmelt-flood fans) that are today critical habitat for present day flora and fauna (Demitroff, 2007).

Repeated Pleistocene climatic cycles, that is extended cold periods of deep seasonal frost and/or permafrost interrupted by brief warm interglacials, had a profound influence on the region’s floral history. At times, the state’s landscape became polar-like, covered with sparse tundra to semi-desert (*i.e.*, ~30% coverage of low herbaceous plants) vegetation. Pollen, peat, or wood fragments dating to the the glacial maximum have not yet been recovered from New Jersey, so the true nature of Pleistocene plant life remains speculative (Demitroff, 2007). When climate cooled, vegetation would migrate along the Atlantic Coastal Plain to some far south refugia. Plant passage was aided by sea-level drop as ice sheets grew and the Coastal Plain widened. The coastline at glacial maximum was ~125 meters (~400 feet) lower than today, nearing the US Continental Shelf. Fortunately for East Coast flora, the Appalachian Mountain range trends north to south providing unfettered plant passage.

Please review and advise. I will adjust these paragraphs accordingly to suit your needs.

Sincerely yours,

Mark Demitroff