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FISH FOR BEAUTY IN DISMAL SWAMP!

(One Man's View of the Swamp)

Running Title: FISH IN DISMAL SWAMP

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Origin and Climate

The life-blood of lakes is carried in feeder streams. Whether rushing or percolating, water takes nutrients from soils to lakes. Where the soil is rich, lakes are productive; where the soil has been laboriously weathered from stubborn metamorphic rocks or sand deposits, lakes are infertile. But what are the life-giving resources of a lake that pours its waters in exodus? For such is Lake Drummond, the heart of the Great Dismal Swamp. The Swamp lies 15 to 27 feet above sea level on a terrace sloping gently eastward. To understand the energetics and ecology of this dying swamp, one must consider the origin of the basin and the climate of the area.

That lakes begin to fill as soon as they are created and that they have usually short geologic lives is axiomatic to limnologists. A map (Ramsey et al., 1) reveals that Lake Drummond now comprises only a small fraction of the original Dismal Swamp basin. In short, Lake Drummond is the remnant of a much larger lake that once filled the basin of the Swamp. A shallow basin with restricted outflow soon becomes stagnant. Acid conditions arise that result in slow and incomplete decomposition of organic matter, hence, peat accumulates. The basin of Dismal Swamp is mostly filled with thick beds of sponge-like peat from which waters escaped slowly in colonial days.

Barrier islands and beaches with lagoons behind them at the junction of ocean and land are familiar features of maps

of the North Atlantic coast from New Jersey to Texas. At Cape Henry, large moving sand dunes were active until recent years. In 1799, Latrobe (2) reported that dunes near the Old Cape Henry Lighthouse in Ft. Story has moved 350 feet in 15 years. The Great Dune in Ft. Story, referred to by Egler (3) in 1942 is gone--a victim of military development and civilization. In 1963, I visited another active dune moving southwest into the swamps or "desert" of Seashore State Park. One block landward of the Virginia Beach Boulevard, one emerged abruptly at the base of a nearly bare dune rising in one-quarter mile some 90 feet, then dropping precipitiously to a freshwater lagoon. Large trees were being buried by sand on the steep lee slope. Now this last great dune near Cape Henry is "dead" and houses and weeds dot its bulldozed crown. The steep leeward slope remains, stabilized by weeds and vines.

The origin of the Dismal Swamp basin is illustrated, I believe, in these wind-blown dunes and in miniature profiles at Cape Henry today. In Seashore State Park are forested alternating crescentric ridges and lagoons representing former barrier beaches and their lagoons. These are now covered with a climax association of cypress and gum trees in the wet swales, and scrub oaks with members of the heath family predominating in the understory of the dry burned-over sand ridges. The Seashore State Park runs quickly from foredunes on the shore of Chesapeake Bay to these striking freshwater swamps and ridges. The appearance of the plants in these always-wet swales gives

one the illusion of being a thousand miles south of Virginia. The live oaks, a profusion of spanish moss, and evergreen broad-leafed plants with southern affinities seem to deny Virginia's climate. Dismal Swamp nearby is also a northern outpost for many southern species of plants and animals.

This spectacular change from salt-spray adapted communities to semi-tropical freshwater swamps is made possible by temperature moderation from proximity to the ocean and aggradation of continental shelf sands during a period of relative stability of sea level. Could not the basin of Dismal Swamp have been created by similar large, moving sand dunes when the ocean was slowly rising on the Dismal Swamp Terrace (+15 to +27 feet now) in the past 6,000 to 9,000 years? The origin is being studied by geologists from borings, underlying sediments, and stratigraphy of the surrounding region. Irregular depths of peat might suggest a basin invaded by moving dunes, although allowance must be made for burned-out peat layers, for almost none of the Swamp seems to have escaped fires. Reports of fine white sand suggest wind rather than wave origin of the sediments beneath the peat.

The southern affinities of plants and animals suggest that climate has not changed greatly in the coastal area in the last 10,000 years. Coastal zones may have been sanctuaries even in the ice ages for Dismal Swamp is close to the ocean with its protective humidities and temperatures. Climate is strongly moderated by proximity to the oceans, and the Gulf Stream which carries 1,000 times as much water as the mighty Amazon River helps provide a local maritime climate.

Images, Dreams and Drainage

The clearest images of the primeval Dismal Swamp come from the pens of William Byrd (4) and Edmund Ruffin (5) who, over a century apart (1710 and 1845), described the Swamp before man had removed much of its water. We are fortunate that Byrd, a gentleman of highest rank in his time, was a literary man--if a bit fastidious about habitats suitable for man or beast and a rather poor naturalist outside his library. Ruffin was far ahead of his contemporaries scientifically. He gave a penetrating account of the Swamp and recognized the value of humus in soil and its ephemeral tendency with drainage. If one skips the "poetic" embellishments, Byrd, without entering the Swamp, paints a picture of a flooded tangled mass of vegetation, fallen junipers, with rare dry spots where men could bed down without lying in water. Water stood knee-deep for miles along the survey route.

The boundary survey was conducted in wet, cold, March--apparently to avoid snakes and insect pests--because the remainder of the boundary was run in the fall when temperatures had dropped again. Curiously, a foray for snakes in the summer of 1950, with a party of four and two experienced herpetologists, yielded many snakes but only one water moccasin and that caught by the author, an amateur. Perhaps a fear of snakes loomed large in Colonel Byrd's mind in organizing the survey. Byrd surveyed in late winter which is about the wettest season in Virginia but it was a "dry" year!